

5.0 ROAD CONSTRUCTION (Refer to Chapter 4 Also)

5.1 SIGNPOSTING OF ROADWORKS

Signposting of roadworks shall be undertaken to assist the safe passage of motorists through the work site. Signposting and control of the work site shall aim to separate motorists from the workmen and machinery wherever possible.

It is the developer's responsibility to ensure the provision and maintenance of all signposting and traffic control devices in accordance with AS1742.3 - 1985. All contractors working on site shall use safe work practices when engaged in traffic control and shall be certificated traffic controllers.

All workmen engaged on traffic control duties or working adjacent to traffic lanes shall wear safety vests of fluorescent colouring.

If a work area intrudes onto a traffic lane such that two way traffic is not possible, then detours or traffic control persons shall be used. In the event of works causing traffic delays and disruptions, at least 7 days prior notice shall be given to the Director Works where possible.

5.2 FOOTPATHS

Shall be constructed to plan cross sections and where no concrete is required, the full width is to be sown with grass. Refer to Clause 3.8.6 for grass seed mixtures. Establishment of grass is to be completed within the maintenance period. Turf strips to an equivalent width of 1.2 metres will be required behind kerb and gutter and concrete dish drains or similar structures and diagonally across footpaths to prevent soil erosion and assist silt control.

5.3 CLEARING

The full formation width is to be cleared of all timber, boulders etc., and in stable ground or where only minor filling is required, all trees and surface roots are to be grubbed to a depth of 0.3 metres, and the holes backfilled with sound and properly compacted material.

5.4 HAZARDOUS TREES

Any trees within the road reserve which are considered by Council's Engineer to be hazardous to traffic or installation are also to be removed or pruned as required. Refer to Chapter 3.

5.5 **DISPOSAL BY BURNING**

In areas where burning of timber is permitted by prevailing regulations, all cleared and fallen timber is to be stacked clear of work and completely burned in an approved burner with due observance of Council's current firefighting and maintenance requirements and the E.P.A. requirements. Where excavation of trenches is required to facilitate burning, these are to be constructed outside of proposed lot boundaries, preferably within reserves or similar areas as approved by Council's Engineer.

5.8 **DISPOSAL BY CHIPPING**

Any approved cleared vegetation may be put through a chipper to reduce it to pieces not larger than 75 x 50 x 15mm. The chippings may be either spread over the site or stockpiles for re-use as mulch as directed by the Superintendent.

5.7 **OTHER DISPOSAL**

In areas where burning is prohibited by regulation, all cleared material shall be removed by the contractor to an authorised Council dumping area or otherwise disposed of as approved by Council's Engineer.

5.8 **FILLING WITHIN THE ROAD RESERVE**

5.8.1 *General*

Intended fill shall be approved by Council's Engineer and is to be sound free from any organic matter, rubbish etc. Fill is to be placed in layers not exceeding 150mm compacted in depth and spread evenly for the full width between batter pegs. Tipping of loose material over partly completed fill to obtain the necessary width will not be accepted. On locations where fill is carried up in benches, the adjoining batters are to be adequately bonded and compacted.

5.8.2 *Compaction Tests*

Tests will be carried out at the frequency specified in AS3798-1990 during filling of footpath areas and batters and a minimum compaction of 95% standard maximum drv density will be required.

5.8.3 *Benching*

Proper support benching is to be constructed as indicated on the plan for fill on side grades in excess of 25% and on lesser grades where considered necessary by Council's Engineer to improve stability. No fill is to be placed until benching has been inspected and approved.

5.9 **CUTTINGS**

Batter slopes are to be cut in accordance with the plan, unless instructed otherwise by Council's Engineer due to special circumstances.

5.9.1 Batter Faces

Batter faces are to be clean cut and free from loose or overhanging rocks etc. Care is to be taken that batters are correctly pegged and an even slope maintained for full depth so as to provide for full width shoulder and table drain construction.

5.9.2 Stabilisation of Batters

Batter faces are to be stabilised to the satisfaction of Council's Engineer. Refer to Erosion and Sediment Control Section - Chapter 3.

5.10 ROAD SUBGRADE

Overall subgrade is to be of sound material, compacted to 100% standard maximum dry density, and trimmed to the same crossfall as the surface course gravel. Any unsuitable material is to be removed, replaced with sound material and compacted to the required density as directed by Council's Engineer. Test results from a registered NATA laboratory shall be provided by the developer prior to approval of the subgrade by Council.

5.11 ROCK SUBGRADE

In the case of rock subgrade, the rock is to be thoroughly ripped to a depth of 300mm below subgrade surface with the ripping extending to the sides of formation and is to provide drainage away from the pavement base. Ripped material is to be compacted to form the subgrade construction layer. Compaction to 100% standard maximum dry density is required.

5.12 SUBSOIL DRAINAGE

Subsoil drainage is to be in accordance with the guidelines in A.R.R.B. Special Report No. 41 or as directed by Council. In all cases subgrade is to be prepared and shaped so as to allow free drainage to the edge of the formation. Sub-surface drains at a minimum depth of 600mm below finished subgrade level are to be provided at least on the uphill side of the road. The drains should be constructed as detailed in Clause 6.8 of these requirements.

5.13 DEAD END ROADS

At the end of all dead end roads an approved treated timber log barrier suitable for in ground use or similar is to be provided across the full width of the road reserve. On rural roads suitable chevron treatment will also be required to designate the end of the road. At "T" junctions an intersection sight screen chevron will be required. All dead end roads must have "No Through Road" signs installed. All signage shall be in accordance with AS 1742 Pt. 2.

5.14 PAVEMENT CONSTRUCTION

5.14.1 Placement & Compaction of Pavement Materials

Pavements shall be placed and compacted in layers not in excess of 200mm or less than 100mm compacted in thickness. Where placement of two or more layers of the same material occurs, the top of the current compacted layer shall be lightly scarified prior to placement and compaction of the following layer.

5.14.2 Construction Standards

Pavement Layer	Construction Tolerance	Shape
Subgrade	+15mm to -30mm	Show no signs of instability or deformation under proof rolling.
Sub-base	+20mm to -20mm	The surface of the sub-base should not deviate from a 3 metre straight-edge laid in any direction by more than 25mm.
Base Course	+10mm to -10mm	The surface of the base course should not deviate from a 3 metre straight-edge laid in any direction by more than 15mm
Pavement Surfacing/ Wearing Course	+10mm to -10mm	The finished surface should not deviate from a 3 metre straightedge laid in any direction by more than 7mm.

Finished gravel pavement levels shall not be lower than the lip of the gutter in a flush seal application. Where an A.C. finish is applicable, a 25mm allowance is to be made.

Where new pavement construction joins to existing pavements, each of the existing pavement layers are to be benched a minimum of 300mm or as directed by Council's Engineer to effectively key in the new pavement.

The compaction requirements are as follows:

* **Compaction Control - Specification & Standards**

Layer	Compaction Requirement	Test Method
Subgrade	100% standard maximum dry density	AS1289.E1.1
Sub-base	95% modified maximum dry density	AS1289.E1.1
Base	98% modified maximum dry density	AS1289.E2.2
	Density in Place Test	AS1289.E3.1
	California Bearing Ratio (CBR) Test	AS1289.F1.1

5.15 **TESTING OF PAVEMENT**

Testing is to be undertaken by a NATA registered laboratory, at full cost of the developer, and forwarded directly to Council for approval. All layers will be tested to the full depth of the layer placed or a minimum of 150mm depth. An in situ density test will be required at the start of the work and thereafter at about 50 metre intervals, randomly located along the road as indicated by Council's Engineer, with a minimum of two tests for any road less than 50 metres in length. An additional test in cul-de-sacs will be required near the extremity. No pavement layer shall be covered by subsequent pavement layers until the results of the density tests have been delivered to and approved by Council's Engineer.

Laboratory determination of maximum dry density for pavement materials which have been modified with cement must be undertaken within four hours of the cement being added to the material. Materials tested outside this time will be subject to an adjustment as determined by Council to determine the correct maximum dry density. For either natural or modified material, the laboratory determination of maximum dry density shall be undertaken at a frequency of no less than one determination for each days production of material.

Benkelman beam tests to determine final surface deflections will be required to be carried out at the developer's cost. Acceptable final surface deflections will be determined by Council generally in accordance with A.R.R.B. Special Report No. 41, Figure 20, for design traffic up to 106 ESA's and NAASRA Design Guide Figure 10.3 for greater than 106 ESA's.

5.16 **CONDUITS & ROAD CROSSINGS FOR SERVICES**

In all cases, water services or accommodating conduits, sewer and water mains and telephone and electrical conduits or cables shall be placed across roads and backfilling thoroughly compacted at no later than base course gravel stage. The locations of all crossings shall be marked on the face of kerb and guttering, or alternatively with brass plates set in or glued to the face of the kerb by either stamped or impressed lettering.

Council will require density tests to be performed over the trench area to confirm specified densities of the trench have been achieved and shall be in accordance with AS3798-1990 which requires one test pit per two layers per 40 lineal metre length of trench. All backfilling shall be carried out in accordance with Council's Public Utilities Committee and Code of Engineering Practice for Street Openings.

5.17 QUALITY STANDARDS FOR PAVEMENT MATERIALS

5.17.1 Rigid Pavements

Material quality requirements for sub-base and base course concrete shall be as specified in R.T.A. Form No. 76 (1992) and the R.T.A. Concrete Pavement Manual, with the exception that for roundabouts the base course concrete shall be fibre steel concrete (fibrecrete). The fibrecrete shall be Grace F6/75.

5.17.2 Accessway Pavements

(a) Flexible Pavements - Requirements of Section 4.6.6 shall apply, with the exception that pavement materials for sub-base and base course shall comply with A.R.R.B. Special Report No. 41 Section 5, "Pavement Materials".

(b) Rigid Pavements - Construction details shall be in accordance with the following Cement & Concrete Association of Australia documents:

* For design - "Concrete Street & Parking Area Pavement Design" (1984).

* For construction - "Outline Guide for Construction of Concrete Road Pavements" (TN50).