PROPOSED PERTH OVAL REDEVELOPMENT

PUBLIC OPEN SPACE

CIVIL WORKS SPECIFICATION

TOWN OF VINCENT

TABLE OF CONTENTS

1.0 SITE PREPARATION

1.1 SCOPE

The work of this section comprises but not limited to excavation, disposal of surplus excavated material both on and off the site, supply of compaction and filling material and the preparation necessary to bring the areas to correct shape and level prior to construction, and as follows:

- Clearing
- Excavation
- Clean up

Related Work

Co-ordinate and co-operate with the following trades:

- Electrical Services
- Landscape and Reticulation

References

AS 3798 1996 Guidelines for earthworks for commercial and residential developments.
Contractor to comply with Town of Vincent specifications, policies and building regulations.

Definitions

Rock: natural or artificial material encountered in the excavation which cannot be removed until broken up by mechanical means such as rippers, jack hammers or percussion drills.

Sub-grade: the natural ground beneath the excavation.

Filling: a general term for material spread and compacted over the sub-grade to make up finished levels or levels to the underside of the base.

Sub-base: selected filling material spread and compacted over the sub-grade to make up levels to the underside of the base.

Base course: a selected filling layer spread and compacted to form an acceptable working surface.

Wearing course: bituminous concrete as specified in section 3.8.1

Approval for Variations

Before starting any site preparation works which may involve variation (whether addition or deletion) obtain a determination from the Town's Executive Manager Technical Services or his representative.

1.2 CLEARING

Clearing shall be confined to the area specific in the contract drawing No. 2169-DC-1B. The Contractor shall obtain all necessary statuary approvals prior to commencing works and **no** trees are to be removed without the written consent of the Town's Manager, Park Services. The contractor shall dispose of all cleared material off site and no material removed as part of the clearing shall be used as backfill.

1.3 EXCAVATION

The top 100mm of over burden comprising soil and organic matter such lawn and grass to be stripped and disposed of off site irrespective of final levels, in the area as specific in the contract drawing No. 2169-DC-1B.

Where excavation occurs adjacent existing structures all works shall be undertaken with due care and any damage shall be reinstated to the satisfaction of the Town's Executive Manager Technical Services or his representative.

1.4 FILLING

Fill generally as required or as shown on the drawings.

1.5 COMPACTION

Place filling in layers not exceeding 300mm deep when measured loose.

Bring filling to optimum water content by watering, and compact each layer thoroughly and uniformly with a vibrating roller where practical.

Hand tamp against ground or perimeter beams or walls

Compact each layer of filling to obtain a uniform density of not less than 95% of the maximum dry density at optimum moisture content as determined by the Dry Density / Moisture Content tests set out in AS 1289.

Finish the base to the following tolerances:

- Variation from designed level 10mm
- Variation from 3000mm straight edge 10mm

1.6 CLEAN UP

On completion of work in accordance with the contract remove surplus materials imported to the site, level off surplus excavated material, or pile such material as directed by the Town's Executive Manager Technical Services or his representative.

2.0 DRAINAGE

2.1 GENERAL

All the works must be constructed in accordance with this Specification.

2.2 MATERIALS

2.2.1 Precast Components

All precast components incorporated in the works shall be free of cracks, chips and deformities. Any damaged items shall be rejected and removed from the site.

2.2.2 Precast Concrete Lines

Precast concrete liners for soakwells shall unless otherwise specified, be constructed of 1200mm nominal diameter reinforced concrete pipe segments. The segments shall be of equivalent strength of Class "2" pipes and shall have interlocking joints and louvred slots.

2.2.3 Concrete

Concrete used for in-situ work shall conform to AS3600 and be provided by a pre-mix concrete supplier conforming with AS1379, or mixed on site using materials as specified and plant to the approval of the Executive Manager Technical Services.

Concrete for soakwells shall have a minimum 28 day cylinder test compressive strength of 20 Mpa.

Maximum size of aggregate shall be 20mm.

2.2.4 Cement

All cement used shall be Portland Cement in accordance with AS1315 and obtained from an approved manufacturer.

Cement shall be delivered to the site fresh and in sealed bags and stored in a weather-proof environment until such time that it is to be used. Any bag showing signs of deterioration or setting is to be rejected.

2.2.5 Aggregate

Fine aggregate shall be well graded, clean, sharp and free from clay and organic impurities in accordance with AS1141.

Coarse aggregate shall be crushed granite or diorite clean and free from all impurities and dust in accordance with AS1141.

The maximum particle size shall not exceed 20mm.

2.2.6 Water

Water for use in concrete and mortar shall be free from any impurities harmful to concrete, mortar or steel.

2.2.7 Sand

Sand for mortar shall be crushed stone or natural sand free from all deleterious substances and have a uniform grading. Morter shall be 3 parts sand, 1 part cement.

Sand for bedding or backfilling shall be clean sand free from roots, clay or any deleterious matter.

2.3 SOAKWELLS

2.3.1 General

Soakwells shall be constructed with the tops of the covers laid, flush with the top of the pavement level and matching the longitudinal grade of the pavement.

The distance between soakwells shall not exceed 40.0m from centre to centre or as specified by the Executive Manager Technical Services or his representative.

2.3.2 Soakwell Excavation

Excavation for soakwells must be made to a depth of 1200mm and of sufficient dimensions to allow the base and walls to be constructed.

Where a firm pit foundation cannot be obtained, the Contractor shall place timber piles and raft. The depth of piles shall be as directed by the Executive Manager Technical Services.

2.3.3 Precast Concrete Soakwells

Precast Concrete Soakwells shall be assembled in strict accordance with manufacturer's specifications. It is important that the alignment of the pipe liners and the level and location of the matching pieces be accurately set in order that kerb level and location of the matching pieces be accurately set in order that kerb level components can be properly constructed. If the pits are not constructed to the correct lines and levels, they shall be removed and rebuilt.

All joints between pit components shall be grouted with 3:1 sand/cement mortar.

The lengths of pit liners shall be chosen with particular regard to the design of each pit. Generally, the number of joints should be minimised by the use of 0.9m and 1.2m lengths. Under no circumstances shall the top most section be broken down to a length of less than 300mm.

2.3.4 Soakwell Base

Bases shall be a minimum of 150mm thickness. Bases may comprise either precast or cast-insitu slabs.

2.3.5 Soakwell Covers

Soakwells shall have a concrete cover which contains a cast-in grate and frame.

For all covers, the lids shall be fitted with suitable lifting keyholes and rings.

2.3.6 Brickwork

All brickwork shall be carried out by competent tradesmen. The bricks shall be properly bedded and bounded true to line and level.

All joints shall be struck smooth. Mortar for brickwork shall be one part Portland Cement, to three parts sand batched by weight.

2.3.7 Inspection And Tolerances

No backfilling shall be commenced until the drainage has been approved by the Executive Manager Technical Services or his representative.

The horizontal deviation of any soakwell shall not exceed:-

150mm from the alignment of the centre line of the ROW or the agreed soakwell location.

The soakwell grate shall not vary more than 10mm from the calculated level of the ROW pavement level.

Soakwells which have not been constructed within tolerance shall be excavated and relayed at the entire cost of the Contractor.

2.3.8 Backfilling

The material used for backfilling soakwells in pavements shall be a clean granular material free from stones over 25mm dimensions, organic or other deleterious matter and shall be compacted in 300mm layers to a minimum of 95% of the Modified MDD, up to the subgrade level.

The surfaces shall be graded level with the surrounding ground.

If any subsidence of backfill occurs during the Contract period, including the Defects Liability Period, in any ROW, or elsewhere in the works, the Contractor shall at his own expense, make it good immediately.

In the event of the Contractor's failure to make good such defects, the Executive Manager Technical Services may take action under the provisions of AS2124-1992.

3.0 PAVEMENT

3.1 SCOPE

Supply and installation of bituminous concrete paving including but not limited to:

- Preparation of sub-grade
- Subbase course supply, laying and compaction
- Base course supply laying and compaction
- Bituminous concrete surfacing
- Concrete kerbing

Related Work

- Site preparation
- Drainage
- Concrete

References

- AS 1160 1996 Bituminous emulsions for construction and maintenance of pavements.
- AS 1141 Methods for sampling and testing aggregates

- AS 1289 Methods of testing soils for engineering purposes.
- AS 2008 1997 Residual bitumen for pavements
- AS 2150 1995 Asphalt (hot-mixed)
- AS 2157 1997 Cut back bitumen
- AS 2357 1980 Mineral fillers for asphalt
- AS 2578 1996 Aggregates for rock & engineering purposes
  2758.1 1985 Concrete aggregates
  2785.2 1985 Aggregate for sprayed bituminous surfacing

3.2 GENERAL

The design of the Perth Oval Redevelopment Public Oval Space paving is such that sections of the shared paths network has to cater for emergency and general services vehicles requiring enhanced structural strength. These areas, as shown on drawing 2169-DC-1B, are referred to as **under traffic**, whilst the remainder of the path network is intended for **pedestrian** use only.

For **Pedestrian** applications the pavement shall consist of a minimum 200mm thick crushed limestone.

Areas **under traffic** the pavement shall consist of a minimum 250mm thick crushed limestone.

3.3 MATERIALS

All material to be supplied and/or used by the Contractor shall conform to the relevant Australian Standard Specification and in all cases shall be of quality approved by the Executive Manager Technical Services or his representative.

The Contractor shall advise the Executive Manager Technical Services or his representative of the source of the various materials or place of manufacture.

Whenever directed by the Executive Manager Technical Services or his representative, the Contractor shall prepare a sample of the required size, number and description and submit for tests as specified or additional tests as may be considered necessary. If the samples so tested do not fully comply with the required standards, the materials used and all articles made therefrom may be absolutely rejected and the Contractor shall replace them with new and sound materials and submit for further testing as may be considered necessary by the Executive Manager Technical Services.

3.3.1 Limestone

All limestone used in sub-base construction shall conform to the following specifications:

Crushed limestone shall be limestone obtained from an approved source and be crushed to comply with the grading in this specification.

The crushed limestone shall be free from:-

- roots and other organic matter; and
- sand, capstone and other deleterious material

Methods of sampling and testing of crushed limestone shall be in accordance with the following Australian Standards:-

AS1141 - 1974 Methods of sampling and testing Aggregates
AS1289 - 1991 Methods of testing soils for Engineering purposes

It shall not contain spalls or lumps in excess of 150mm diameter, or any excessive amount of fine grain material.

The crushed limestone shall have resistance to abrasion, when determined in accordance with the Los Angeles Test to show a weight loss not exceeding 60% per cent by weight.

The Calcium Carbonate content of the crushed limestone shall not be less than 60% or more than 80% per cent by weight.

The crushed limestone for sub-base shall comply with the following grading requirements:-

Sieve Size	**Per Cent Passing by Weight**
(Square openings As Sieve)	
75mm	100%
19mm	50-75%
2.36mm and less	30-50%

3.3.2 Concrete

Concrete shall conform to AS3600 and shall be supplied by a concrete supplier conforming with AS1379.

Concrete shall have a characteristic strength of 25mpa, 60mm slump and maximum aggregate size of 20mm.

Concrete strength shall be tested by means of product assessment methods in accordance with Section 20.4 of AS3600. The Contractor shall register the project and arrange for results to be sent to the Executive Manager Technical Services.

On site mixing of concrete may be used subject to the Contractor's proposal of mix details being submitted to and approved by the Executive Manager Technical Services. Site mixed concrete shall be subjected to site testing for slump and strength in accordance with the relevant Australian Standards.

3.3.3 Water

Water used for concrete or compaction of pavement materials shall be of potable quality, free from any impurities harmful to concrete or the pavement material being compacted and where public supply is used the Contractor shall obtain the supply Authority's approval to the use of the water for the Contract.

3.4 SUB-GRADE

3.4.1 General

All subgrade material shall be checked to ensure that it is free from roots and any other organic matter and/or other potentially deleterious material. It shall remain the Contractor's responsibility to satisfy themselves that the proposed site sand subgrade material as found on site is suitable for the purposes of this Contract as specified herein and shall perform accordingly.

3.4.2 Non Conforming Subgrade

Any section of sub-grade which, in the opinion of the Executive Manager Technical Services, is composed of unsuitable material or is composed of material which would break down with ageing or weathering to such an extend that it would then fall outside the limits of the Specification shall be rejected. Any material thus rejected shall immediately be excavated and removed from site and replaced with conforming material by the contractor.

The subgrade shall be excavated in conformity with the profiles, dimensions, camber and depths shown on the approved drawings.

3.4.3 Width of Box

The width of box excavation shall be in accordance with the approved drawings. The tolerance for sub-grade width shall be +/- 50mm.

3.4.4 Subgrade Tolerance

The finished levels of sub-grade shall be within +/- 20mm of the design levels.

3.4.5 Depth of Subgrade

The sub-grade shall be compacted to 95% of the maximum dry density to a depth of 300mm when tested in accordance with AS1289 E2.1 - 1977.

3.5 BASE COURSE

3.5.1 General

The base course is to consist of material specified in Section 3.2.2 and 3.2.3 and shall comply with the material requirements of this Specification.

3.5.2 Base Course Thickness

The thickness of the base course for areas designated for **pedestrian** use, after compaction, shall be to the design thickness of 200mm as specified on the approved drawings. Tolerance -0 + 10mm.

The thickness of the base course for areas designated **under traffic,** after compaction, shall be to the design thickness of 250mm as specified on the approved drawings. Tolerance -0 + 10mm

3.5.3 Preliminaries

The base material shall be placed so that the sub-grade material is not disturbed or broken up and an even thickness as specified is obtained.

3.5.4 Spreading

The base material shall be spread:-

(i) To the required compacted thickness by means of an approved mechanical spreader.

(ii) By grading from continuous stacks deposited on the sub-base.

All materials shall contain sufficient moisture to ensure that the specified density requirements are obtained when the materials are compacted.

Materials shall be spread without segregation of large or fine particles. Segregated materials shall be remixed by harrowing and blading or removed from the site.

3.5.5 Compaction

The base course material shall be compacted by rolling and watering. Each course shall be rolled until it is compacted to a firm, even surface by approved self-propelled steel-wheel or pneumatic tyred rollers. The use of the pneumatic tyred roller is essential for the final passes to achieve the compaction of the immediate surface material. Where in the opinion of the Executive Manager

Technical Services, damage to adjoining properties may result, the use of vibrating rollers will not be permitted.

The rolling shall be carried out parallel to the centreline of the road and shall progress gradually from the low to the high part of the road, uniformly lapping each preceding track, covering the entire surface thoroughly and continuing until the surface presents a smooth even surface, true to the required shape and grade. Grading of loose material over a hard surface and/or compaction in a thin layer is not permitted.

When completed, the pavement shall be firm and unyielding to the satisfaction of the Executive Manager Technical Services and have a compaction which shall not be less than 98% of the maximum dry density when tested in accordance with AS1289 E2.1 - 1977.

The surface course shall be tested for shape and level and any irregularities greater than 10mm when tested for shape and level and any irregularities greater than 10mm when tested with a straight edge three (3) metres long shall be made good by addition or removal of material and further rolling until the specified cross section is obtained.

If, during the construction period, the surface of the pavement shows, in the opinion of the Executive Manager Technical Services, evidence of crazing, ravelling, potholes, corrugation, consolidation, subsidence or lack of cohesion, the pavement shall be loosened uniformly by harrowing or other approved means, additional material added where necessary to fill depressions or to provide binding, and the whole compacted as specified.

3.5.6 Alternative Methods of Construction

Alternative construction for the base courses may be approved on submission on specification and such specification being approved by the Executive Manager Technical Services.

3.6 KERBING

3.6.1 Material

Concrete used for the kerb shall be ready mixed concrete conforming with the provisions of Australian Standard No. 1579. The maximum size of aggregate shall be greater than 9mm but less than 20mm.

The cement shall be Portland Cement conforming with the provisions of AS 1315 and have a 30mm slump.

The cylinder strength when tested in accordance with AS 1012 part 9 shall exceed 10 Mpa in 7 days and 20 Mpa in 28 days.

3.6.2 Equipment

All kerbing constructed under the specification shall be placed by an extrusion machine approved by the Executive Manager of Technical Services or his representative.

3.6.3 Shape

Gaps between old and new work shall be filled by hand placing, rodding and shaping of the concrete until satisfactory shape and finish has been obtained.

Hand placed sections shall be constructed using similar concrete to that used for the remainder of the kerb, rodded and shaped to give a finished kerb meeting the requirements of this specification.

The top surface of the kerb shall be parallel to the ruling grade of the pavement or pre-determined level and shall be free from depressions exceeding 3mm when measured from 3 metres long straight edge.

3.6.4 Jointing

Expansion joints shall be provided at 5.0 metre intervals, sawn at right angles to the longitudinal line of the kerb. The width of joint shall be 10mm thick extending the full section of the kerb.

All expansion joints shall be sealed over the full face of the section with a 12mm square strep of "Sampreme" foam or similar approved joint filler, leaving a depth of 10mm at back, top and front of kerb which shall be sealed with Expandite Silicone 66 or equivalent to a depth of 10mm to all faces of the kerb.

Equivalent types of foam and mastic may be used if approved by the Executive Manager of Technical Services. All joints shall be cut on the day following the laying of the section.

3.6.5 Contraction Joints

Contraction joints shall be formed at 5.0 metre intervals, located midway between expansion joints and shall be made full depth of the kerb by cutting with a spade, shovel or similar tool. The joint shall then be formed with a grooving tool to a depth of 15mm and a width not greater than 6mm.

All contraction joints shall be sealed with Expandite Silicone 66 or equivalent, finishing 3mm below the face of the kerb.

3.6.6 Curing

After initial set, concrete surfaces shall be cured for a minimum period of seven (7) days with a sprayed application of Calcure 'CR' or equivalent, applied at the rate and by a method specified by the manufacturer, within two (2) hours of surface finishing of the concrete.

3.6.7 Protection for Pedestrians and Vehicles

Adequate provision shall be made by the Contractor for the safe and convenient passage of pedestrians and vehicles in sections of road, footpath or pedestrian island adjacent to work.

The contractor shall be responsible for all damage to kerb by pedestrians, traffic or weather, etc., until the joints have been cut. Any damage shall be made good at the contractor's expense.

No materials or plant required in the construction of the kerb shall be deposited on any footpath or roadway so as to obstruct pedestrians or traffic unreasonably. All materials and plant shall be kept within the narrowest practicable limits.

Suitable traffic barriers and/or warning signs to regulate and protect pedestrians and traffic shall be erected by the Contractor and maintained as may be necessary or as directed. Such barriers and warning signs, if required at night, shall be provided with warning lights and shall be erected by the Contractor and maintained as may be necessary or as directed. Such barriers and warning signs, if required at night, shall be provided with warning lights and shall be illuminated for sunset to sunrise.

Particular attention is drawn to the appearance of the finished work. All precautions shall be taken to prevent the dropping of concrete onto sealed pavements, and dropped materials are to be removed immediately and the marks obliterated by washing and brooming before the concrete sets.

3.6.8 Backfilling

The backfilling to the kerb shall be placed after the curing of the concrete and acceptance of the kerbing by the Executive Manager Technical Services.

The backfill material shall be a similar material to the locally occurring topsoil, free from debris and compacted to not less than 92% of the maximum dry density when tested in accordance with AS1289 Es.1 - 1977.

3.6.9 Non-Conformance

Any work not complying with the above specification shall be removed at the Contractor's expense and no payment for such will be made. All surplus materials including materials removed due to non-compliance with the specifications, shall be removed from the site and the area left in a neat and tidy condition.

3.7 BITUMINOUS CONCRETE PAVING

3.7.1 General

The proposed pavement is to be a close gap 'red' asphalt surface, excluding the sections shown otherwise on drawing 2169-DC-1B. To achieve the desired finish the bituminous concrete wearing course will a 30mm thick asphalt layer comprising 7mm gravel ALD with 1% oxide or similar approved.

3.7.2 Tack Coating

Sweep base clean and lightly water if necessary. Spray a priming tack coat over the base with bitumen emulsion in the proportions of one litre per 1 sqm.

3.7.3 Placement

Supply and laying of mixed asphalt road surfacing shall be accordance with AS2734-1984 "Asphalt (hot-mixed) paving - Guide to good practice" covering the following:

- Delivery
- Spreading
- Compaction

3.7.4 Protection

All adjacent buildings, retaining walls, kerbs etc., shall be adequately protected against bitumen during sealing operations.

Any bituminous material coming into contact with them shall be completely removed by use of a suitable solvent.

Make good any damage.

4.0 SAFETY AND WORK PRACTICE REQUIREMENTS

All tenderers shall ensure that they, their plant, equipment and personnel comply with the Occupational Safety and Health Act 1984 and the Occupational Health, Safety and Welfare Regulations of 1988.

In addition all personnel working for the Towns of Vincent shall comply with the safety standards of the Town especially with regard to safety footwear, high visibility vests and minimum standard of clothing for sun protection. All necessary safety equipment shall be provided by the tenderer.

The Town of Vincent is committed to providing a healthy and safe workplace for Council staff, contractors and visitors. Accordingly, the Town recognises its general duty of care obligations as an employer under the relevant Schedules of Occupational Safety and Health Act 1984 and as such requires that any person engaged by Council to perform work shall comply with any prescribed standards, rules and requirements to ensure that the risk of personal injury, plant or property damage or any other accidental loss or environment damage are so far as is practicable diminished.

The contractor is required to comply with local site rules and regulations. This includes but is not limited to:

- Observing smoking regulations.
- The ban or use of illegal drugs, alcohol consumption or carrying of live ammunition or firearms on site.
- The ban of having accompanying children on site.
- Observe housekeeping rules.
- Use and/or wear personal protective equipment as specified.
- Wearing appropriate clothing for sun protection.

As the contractor engaged by Council, you will be informed about your obligations and you may be required to attend or receive induction training prior to commencement on site. (This may include information about First Aid kit locations, Danger and Out of Service tag procedures or emergency evacuation information or location of fire fighting equipment).

Contractors may be required to provide proof of relevant insurance coverage or certificates of competency and contractors are required to report any injury, damage or loss to plant and property to the relevant Council Officer arranging the service.

The Contractor shall at all times conform strictly to the provisions of all site regulations as issued breaches may jeopardise future work with Council. You are urged to consider these issues and to ask questions if unsure.

The successful tenderer will also need to be aware and must comply with Council’s policy on Overhead Wires Procedures - Roadworks.

5.0 CONTRACT PERIOD / COMPLETION DATE

The first National Soccer League match scheduled for the 'new' Perth Oval Stadium is 6 December 2003 and therefore it is the Town's intention to have all works in the Public Open Space completed no later than 29 November 2003. In order for the Town to complete reticulation and landscaping (including turf) works by this date the contractor is required to complete the agreed civil works no later than 1 November 2003.