SECTION 8 - FOOTPATH PAVEMENT CONSTRUCTION

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8.1 DESCRIPTION

This section cover the requirements for the construction of footpath pavements including all subsurface treatment and finishes, to the alignment, dimensions, cross sections and levels shown on the drawings or as directed by the Superintendent.

8.2 INSPECTION

The Contractor is to give 3 days notice to the Superintendent so that they may inspect the following stages of work:

- Set-out & excavation complete;
- Base course installed.

In addition, the Contractor is to give 3 days notice to the Superintendent before the placing of any paving.

8.3 QUALIFICATIONS

All work shall be carried out by an approved specialist company employing skilled tradespeople under the direction of experienced foreman or supervisors. Details shall be submitted to the Superintendent prior to commencement of works.

8.4 CONFORMITY WITH DRAWINGS

All surfaces shall be finished in conformity with the lines, grades, thicknesses and cross sections shown on the drawings or specified or directed by the Superintendent within the following limits:

(a) The deviation of the finished work from line or level shall not exceed 20mm in 10m or 5mm between adjacent blocks. Except on curves or in shaped areas, the deviation of the finished work from a 3m straightedge shall not exceed 15mm at any point.

(b) Footpaths and surfacing shall be shaped to match existing features eg pit covers, edgings and driveways, within 5 mm.

(c) Alignment of the paving shall not differ from the specified line by more than ± 50 mm, provided that the minimum pavement width is achieved at all points throughout the construction.

(d) The slope at any point on the surface shall be not less than 1% and not exceeding 3%.

(e) Unless otherwise specified or directed finished surfaces shall be shaped to shed surface water from the entire area in the direction of natural slope or towards constructed surface drains.

8.5 ALIGNMENT AND LEVELS

The Contractor shall excavate or fill as may be required to bring the pavement bed to the full specified depth below finished pavement level. All formation shall be thoroughly consolidated and shall be neatly trimmed true to line, level and cross slope, so as to provide for the full specified thickness of pavement all places.

Any soft sections in the formation shall be excavated and filled with fine crushed rock, loam or other granular material to the approval of the Superintendent and the whole shall be thoroughly compacted as specified herein. No additional payment will be allowed for this work.

8.6 LOADINGS TO PEDESTRIAN PAVEMENTS

All paving shall withstand loadings due to pedestrians and maintenance vehicles. For areas of uniformly distributed loads, allow for 10kpa loading. For areas where point loads may be experienced, allow for the equivalent loading of a fire-fighting vehicle with a maximum wheel loading of 40 KN, or a hydraulic platform with a point load of 220 KN.

8.7 EXCAVATION AND BEDDING PREPARATION

The Contractor shall excavate and/or fill and compact to the levels as shown on the plans or as directed. All soft, wet or unsuitable material shall be removed to a depth of not less than 75 mm below the design level of the underside of the bedding and the resulting space filled with bedding material, moistened and compacted to form a stable foundation.

Unless otherwise specified, a minimum 50 mm compacted thickness of bedding material consisting of 20 mm class 2 fine crushed rock shall be provided under the full width of the paving.

The subgrade to paved areas shall be trimmed to the appropriate levels, moistened as necessary, and compacted with a vibrating footpath roller of equivalent weight to four (4) tonnes or other by suitable mechanical equipment to the satisfaction of the Superintendent. The top 100mm of the subgrade shall be compacted to a dry density of not less than 98% of the maximum value obtained in the standard compaction test in accordance with AS 1289.

The cost of all works specified above, including the supply of bedding material, shall be deemed to be included in the schedule price for the construction of paving.

8.8 INSITU-CONCRETE PAVING

i) General

The Contractor shall construct insitu-concrete paving as shown on the plans and as detailed in this specification.

Concrete, the material and methods of mixing, placing and curing shall comply with the requirements set out in Section 6 – Concrete.

All concrete paving shall conform to the details set out in Standard Drawing SD 330.

ii) Formwork

Timber (75 mm x 40 mm hardwood) or steel (76 mm x 5 mm equal angle) formwork shall be used on both sides of the path. The formwork shall be in long lengths and securely fixed so that concrete can be properly placed and compacted and the finished paving is true to line and level.

HP Formwork shall be placed for a minimum length of 30 metres and shall be inspected and approved by the Superintendent before any concrete is cast.

Forms shall not be removed sooner than 24 hours after placing of the last concrete in that section.

iii) Placing and Compaction of Concrete

Immediately before concrete is placed, the bedding shall be moist but shall have no free water on the surface.

Placing of concrete shall be carried out without separation of the aggregates or loss of ingredients. During and immediately after placing, the concrete shall be thoroughly compacted by means of tamping, spading and vibrating to ensure that all concrete is thoroughly compacted.

iv) Surface Finish

All concrete surfaces shall be true and even, free from honeycombed surfaces, depressions or projections.

Concrete shall be coloured as specified.

HP The colour of the rendering coat (if any) is to be confirmed with the Superintendent.

Where it is necessary to match a footpath to an existing section it shall be done so as to appear identical with the existing section.

Joints and edges shall be finished with approved tools. Edge of slabs shall be finished with a suitable edging tool to provide a 40 mm smooth border completely around each slab.

Templates shall be drawn only through slotted steel plates bent to shape so that concrete is not disturbed during the operation.

All exposed surfaces shall be given the following finish, unless otherwise specified:

After final compaction of concrete, the top surface of the concrete shall be screeded accurately to the required levels and mono or otherwise finished. Any excess water on the surface shall be carefully removed. 'Driers' to absorb excess water on the surface shall not be used.

Generally, all concrete surfaces shall be kept moist for at least 7 days.

Concrete work shall have a fine, even, dense steel trowelled surface without blemish, using a mechanical rotary trowelling machine, and brushed with a stiff broom before setting.

Excessive working shall be avoided. Concrete shall be kept dry and fines shall not be worked up to surface.

v)Joints

Transverse joints shall be made at intervals not exceeding 1.5 metres and over all house drain outlets, unless otherwise shown on the drawings, and shall be grooved with a suitable marking tool to a depth of not less than 8 mm and a width of not more than 6 mm.

Expansion joints shall be made:

(a) at intervals not exceeding 10 metres;
(b) on both sides of sewer manhole covers;
(c) on either side of vehicle crossings at each joint where concrete thickness changes from 75 mm to 125 mm or 150 mm thickness; and
(d) at the interface between the concrete paving and kerb (e.g. concrete infill to traffic island).

The expansion joint shall be 10 mm wide Bitumastic, Comprebond, Abelflex or other approved jointing material which shall be pre-cut to size and so placed that the top of the jointing material shall be 7mm below the level of the adjacent concrete or brick, extending for the full width and full depth of the concrete paving.

The filler shall be placed in position before concrete is placed, and shall be held firmly in position during the placing of the concrete. Joints shall be truly square and vertical and edges of joints will be neatly finished.

vi) Vehicular and Pram Crossings

The Contractor shall construct vehicular crossings and perambulator crossings in accordance with Standard Drawings SD 310A and SD 320 respectively where shown on the plans or as directed by the Superintendent.

The Contractor shall make provision for vehicle access to properties during the progress of the work by way of temporary bridging of new concrete work and by trimming and surfacing of entrances adjacent to vehicle crossings after same are open to traffic.

vii) Curing and Protection of Concrete

(a) Curing

Refer to Section 6 – Concrete, clause 6.11 for requirements for curing concrete paving.

(b) Protection of Concrete

All concrete shall be adequately protected from damage by pedestrians, animals, vehicles, rain or any other cause.

The Contractor shall give 24 hours notice to the owner concerned in any property vehicle crossing that no motor vehicle will be permitted to cross over the concrete until at least four (4) days after the completion of the laying of the concrete and, if such vehicle is over 1.5 tonnes in weight, until at least seven (7) days after laying.

The Contractor shall be held responsible for any damage to concrete paving during the Contract period.

8.9 PRE-CAST CONCRETE PAVING UNITS

i) General

The Contractor shall construct pre-cast concrete paving as shown on the plans and as detailed in this specification. All pavers are to be as detailed on drawings. The placing shall comply with the requirements set out in this specification & drawings.

ii)Expansion Joints

The Contractor shall provide a 10 mm wide expansion joints at junctions with surrounding surfaces.

iii) Jointing Material

The expansion joint shall be 10 mm wide Bitumastic, Comprebond, Abelflex or other approved jointing material which shall be pre-cut to size and so placed that the top of the jointing material shall be 7mm below the level of the adjacent concrete or brick.

iv) Workmanship and Construction

The Contractor shall install a compacted Fine Crushed Rock base as specified.

A 6:1 Sand/Cement wet mortar bedding shall be spread in a uniform layer on the prepared base and screeded to the nominated design profile and levels to achieve a uniformly thick layer in the range of 20 to 25 mm. Any sand used shall be white well graded washed sand passing a 4.75mm sieve.

A masonry saw cutter shall be used to cut pavers where necessary. Pavers are to be laid with a nominal 3mm gap. Any pavers which are structurally damaged during laying shall be immediately removed and replaced.

After bedding has set, "Sandstick" for joint filling shall be applied to the paved surface.

v)Tolerances

Finished Surface: Not to deviate more than 5 mm over a 3 metre long straight edge and not more than +/- 2 mm in any 500 mm. Perpends: Must align and not deviate more than +/- 2 mm over 3 metre straight edge.

8.10 ASPHALT PAVING AND GRANITE BANDING TO PEDESTRIAN AREAS

i) General

The Contractor shall construct asphalt paving and exfoliated granite banding as shown on the plans, as detailed in this specification and in accordance with Frankston City Council Standard Drawing SD 340.

All granite pavers are to be as detailed on drawings, placed in accordance with the requirements set out in this specification & drawings.

Asphalt paving shall be 30 mm depth of 7 mm Type L asphalt, supplied and laid in accordance with the requirements set out in Section 11 – Hot Asphalt Surfacing of this specification.

ii)Expansion Joints

The Contractor shall provide expansion joints as follows:

(a) 10mm wide joint at junctions with surrounding surfaces;

(b) 10mm wide joint at 7.4 metres centres (typical) throughout.

iii) Jointing Material

The expansion joint material shall consist of an approved prefabricated bituminous jointing compound which shall be pre-cut to size and so placed that the top of the jointing material shall be 7mm below the level of the adjacent concrete or brick.

iv) Workmanship

The pavers shall be free from any injurious defect relating to strength, durability and appearance and shall be the product of machining of sound granitic stone. Stone shall be considered sound only if it has less than twenty percent (20%) secondary minerals as determined by methods of microscopic examination and quarry sampling by VicRoads. Stone for the pavers shall not be supplied from a quarry used for aggregate and shall be quarried only with black powder or other approved soft blasting technique.

Cut pavers shall be clear of all clay, overburden, soft, friable or weathered material and other foreign matter. Its wearing qualities shall be determined by the Los Angeles Abrasion Test and the percentage loss permitted shall not exceed thirty (30). Pavers with vesiculations, veining or fracture lines considered injurious to strength will be rejected. Colour variation, vesiculations and veining shall be of the highest standard.

All paving slabs laid shall conform with the requirements of the specification in all respects. Any variation or defect in manufacture or any damage as during subsequent transport and by handling shall result in the condemnation and rejection of the slab or slabs either before or after laying. The Superintendent shall make the determination of this.

v)Construction

The Contractor shall install a compacted Fine Crushed Rock base in accordance with the Frankston City Council Standard Drawing SD 340.

A 4:1 Sand/Cement wet mortar bedding with an approved bonding agent (by A.V. Syntec or approved similar) applied in accordance with the manufacture's specification shall be spread in a uniform layer on the prepared base and screeded to the nominated design profile and levels to achieve a uniformly thick layer in the range of 20 to 25 mm. Any sand used shall be white well graded washed sand passing a 4.75mm sieve.

The underside of slabs shall be coated with Master Builders 'Masterweld' or approved similar at the rate and in the manner specified by the manufacturer.

The granite paving slabs shall be laid with the exfoliated face as the finished surface and set in the cement mortar mix while it is still freely workable. The paving slabs shall be laid with a 5mm gap between slabs.

The cement mortar mix shall be grouted into the gaps between the granite pavers and external features and raked to a depth of 2mm below the surface level and then ironed. The cement mortar mix shall be a charcoal colour obtained by using, 'Ability', black oxide CAF-X2 or an approved equivalent at the rates recommended by the manufacturer.

The Contractor shall allow for all cutting of pavers with an approved diamond saw around buildings, pit covers, walls, etc.

After creating a uniform, evenly graded surface, the slabs shall then be cleanly washed, and pedestrian traffic over the surface prevented for a minimum of twenty-four (24) hours.

Asphalt paving shall be laid on the compacted Fine Crushed Rock base as soon as practicable after the granite paving has set.

vi) Tolerances

Paving shall proceed in a continuous manner and constant rate. Discontinuity of paving shall only be allowed around covers and other service openings where cutting of paving units is required.

Finished paved surface shall be uniform and conform to the following tolerances:

(a) Departure from design level not more than 10mm

(b) Lipping of adjacent units not more than 2mm

(c) Departure from a 2m long straight edge, placed longitudinally to the path, shall not exceed 4mm.

Failure to lay the pavers to the satisfaction of the Superintendent will result in the entire work being condemned and removal of the paving and the cement mortar base and reinstatement at the Contractor's cost.

8.11 BRICK PAVING

i) General

The Contractor shall construct brick paving as shown on the plans and as detailed in this specification. All brick pavers are to be as detailed on drawings. The placing shall comply with the requirements set out in this specification & drawings.

ii)Expansion Joints

The Contractor shall provide a 10 mm wide expansion joints at junctions with surrounding surfaces.

iii) Jointing Material

The expansion joint shall be 10 mm wide Bitumastic, Comprebond, Abelflex or other approved jointing material which shall be pre-cut to size and so placed that the top of the jointing material shall be 7mm below the level of the adjacent concrete or brick.

iv) Testing of Bricks

Tests to determine compliance with this Specification shall be carried out by the manufacturer of the bricks in accordance with BDRI Specification and Methods of Test for Clay Bricks.

A manufacturer's certificate stating that each lot or consignment of bricks has been tested for compliance with this specification shall be made available to the Superintendent upon request.

v)Sampling

Sampling shall be carried out in accordance with Methods of Tests Part B of BDRI Specification.

vi) Dimensions and Tolerances

Tests for dimensions and tolerances shall be carried out generally in accordance with Part C of BDRI Specification to meet the following requirements.

a) The determined mean length, width and height of a 20 brick sample shall be between the following limits:
   - Length 218 to 222 mm
   - Width 106 to I 10 mm
   - Height 63 to 67 mm

b) The average length of each brick in any 20 brick sample shall not depart from the following:
   - not more than 2 bricks outside the range 218 to 222mm and no brick outside the range 217 to 224 mm

vii) Water Absorption

When tested in accordance with Part J of BDRI Specification, the average water absorption from the results of the 24-hour immersion test on a ten specimen sample shall not be greater than 10 per cent.

viii) Brick Quality

A sample pallet shall be selected from the first consignment of bricks delivered to the site. The Superintendent reserves the right to inspect each brick with regard to quality of finish, including finish, including cracking, voids, crazing edges, chipping, colour and shape.

Any bricks deemed unsuitable as regards quality of finish, shall also be set aside and maintained on site as examples of reject bricks.

The Contractor shall thereafter maintain the quality of the approved bricks for all exposed fair face bricks to be incorporated in the works, using the examples of any reject bricks in the above sample pallet as a guide.

ix) Strength Tests

When tested in accordance with Part F of BDRI Specification, the characteristic transverse strength shall be not less than 3 MPa. When tested in accordance with Part G of BDRI Specification, the characteristic strength shall be not less than 40 MPa.

x)Rejection of Bricks

The Contractor, when preparing his tender, shall allow for a maximum of 5% of bricks per pallet to be rejected on the basis of the brick quality standards.

All bricks rejected on the basis of the quality standards which do not exceed 5% per pallet and are not used (subject to approval) elsewhere in the works and any bricks damaged as a result of the Contractor's operations shall be promptly removed from the site by the Contractor.

In the event of the number of reject bricks based on the quality standards exceeding 5% per pallet, the Builder shall immediately notify the Superintendent. The whole of any lot to which the test samples and test results apply shall be rejected if tests indicate failure to meet any of the requirements of this Specification.

All bricks rejected on the basis of failure to meet the requirements of this Specification and the whole of any pallet in which the number of reject bricks exceeds 5% shall be promptly removed from the site and replaced. The cost of any replacement bricks shall be borne by the Contractor.

xi) Workmanship and Construction

The Contractor shall prepare and install a compacted Fine Crushed Rock base in accordance with the drawings. Bricks supplied shall be clay paving bricks as specified or an approved equivalent.

a) Cutting of Bricks

Where, bricks are required to be cut, they shall be cut using an approved masonry saw. Bricks shall be cut where necessary to accommodate as accurately as possible, all service covers, fixtures and where paving abuts header margins at vertical surfaces. No cut brick shall be less than a quarter brick.

b) Cement Mortar Bed

A 4:1 Sand/Cement wet mortar bedding shall be spread in a uniform layer and screeded to the nominated design profile and levels to achieve a uniformly thick layer in the range of 20 to 25 mm . Any sand used shall be white well graded washed sand passing a 4.75mm sieve.

c) Brick Laying

Bricks shall be placed on the prepared mortar bed by hand with the face uppermost. Bricks shall be placed in the required pattern such that joint widths are not greater than 3mm nor less than 2mm. Joints shall be maintained in straight lines.

Bricks shall be laid in a uniform manner to create an evenly graded surface.

d) Joint Filling

Apply "Sandstick" joint filling as specified over the pavement to fill all joints, sweep pavement clean and remove excess "Sandstick".

e) Accuracy

The completed pavement shall be laid to the following tolerances:

- Surface finishes shall be free of depressions exceeding 6mm as measured with a 3 metre straight edge;
- The difference in level between adjacent bricks shall not exceed 1mm;
- The maximum deviation from the specified design levels for brick on mortar shall be +/-2 mm
- Pavement levels shall be flush with the surfaces of adjacent materials, edges and kerbs, etc.

f) Cleaning of Paving

At completion, clean all paving, removing any stains, surplus mortar or concrete, topsoil, sand, mulch or other similar material.

8.12 GRANITIC GRAVEL PAVING TO PEDESTRIAN AREAS

i) General

The Contractor shall construct granitic gravel paving to pedestrian areas as shown on the drawings and as detailed in this Specification.

Granitic gravel used shall be approved by the Superintendent and shall be free of scoria dust, weeds and foreign matter.

iii) Construction

The Contractor shall prepare and install a 50 mm compacted depth of 20 mm Class 2 Fine Crushed Rock base in accordance with the drawings.

The approved granitic gravel shall be placed directly in a uniform continuous layer of loose thickness which after compaction, will not be less than the required 75 mm thickness. The method of placement shall not cause segregation of the material.

Timber edging (if specified) shall be 75 mm x 25 mm treated pine, straight, free of warps, splits, splinters or other defects, fixed to 450 mm x 75 mm x 50 mm hardwood stakes at 1200 centres using 50 mm hot dipped galvanised nails.

iv) Finish

The surface of the granitic gravel pavement shall be graded and if necessary, scarified, regraded and re-rolled until the regular finish of the required surface density at the required levels, grades and profiles has been achieved. Finished surface levels are to match surrounding surface levels.

8.13 ASPHALT PAVING TO PEDESTRIAN AREAS

i) General

The Contractor shall construct asphalt paving to pedestrian areas as shown on the drawings and as detailed in this Specification.

iii) Construction

The Contractor shall prepare and install a 75 mm compacted depth of 20 mm Class 2 Fine Crushed Rock base in accordance with the drawings.

Asphalt used shall be 7 mm Type L asphalt supplied and laid in accordance with Section 11 – Hot Asphalt Surfacing of this specification.

The asphalt shall be placed directly in a uniform continuous layer of loose thickness which after compaction, will not be less than the required 30mm thickness.

Timber edging (if specified) shall be 75 mm x 25 mm treated pine, straight, free of warps, splits, splinters or other defects, fixed to 450 mm x 75 mm x 50 mm hardwood stakes at 1200 centres using 50 mm hot dipped galvanised nails.

iv) Finish

The Contractor shall adjust and trim surrounding surface levels if required to match finish surface levels of the asphalt paving. Finished surface levels are to match surrounding surface levels.