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LOT 52 Reservoir Road - PARADISE

CIVIL WORKS SPECIFICATIONS

- EARTHWORK
- STORMWATER
- PAVEMENT BASE AND SUBBASE
- PAVEMENT ANCILLARIES
- ASPHALTIC CONCRETE
- SPRAYED BITUMINOUS SURFACING

CLIENT: Mr Pat Belperio

REF. No. 090512
DATE: 14 JULY 2009

0222b EARTHWORK**1 GENERAL****....1.1 CROSS REFERENCES****General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- Stormwater - site
- Pavement Base and Subbase
- Pavement ancillaries

....1.2 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given below apply.

- Standard: To AS 1348.
- Description and classification of soils: To AS 1726.
- Site classification: To BCA clause 3.2.4.
- Bad ground: Ground unsuitable for the purposes of the works, including fill liable to subsidence, ground containing cavities, faults or fissures, ground contaminated by harmful substances and ground which is or becomes soft, wet or unstable.
- Base: One or more layers of material usually constituting the uppermost structural element of a pavement and on which the surfacing may be placed, which may be composed of fine crushed rock, natural gravel, broken stone, stabilised material, asphalt or Portland cement concrete.
- Discrepancy: A difference between contract information about the site and conditions encountered on the site, including but not limited to discrepancies concerning the following:
 - . The nature or quantity of the material to be excavated or placed.
 - . Existing site levels.
 - . Services or other obstructions beneath the site surface.
- Line of influence: A line extending downward and outward from the bottom edge of a footing, slab or pavement and defining the extent of foundation material having influence on the stability or support of the footings, slab or pavement.
- Rock: Monolithic material with volume greater than 0.5 m³ which cannot be removed until broken up either by explosives or by rippers or percussion tools.
- Site topsoil: Soil excavated from the site which contains organic matter, supports plant life, conforms generally to the fine to medium texture classification of AS 4419 (loam, silt, clay loam) and is free from:
 - . Stones > 25 mm diameter.
 - . Clay lumps > 75 mm diameter.
 - . Weeds and tree roots > 75 mm.
 - . Sticks and rubbish.
 - . Material toxic to plants.
- Subbase: The material laid on the subgrade below the base either for the purpose of making up additional pavement thickness required, to prevent intrusion of the subgrade into the base, or to provide a working platform.
- Subgrade: The trimmed or prepared portion of the formation on which the pavement or slab is constructed. Generally taken to relate to the upper line of the formation.

....1.3 GEOTECHNICAL AND ENVIRONMENTAL SITE INVESTIGATION

Report

General: The geotechnical and environmental site investigation report provided is for information only. The geotechnical information and information on contaminants given is information on the nature of the ground at each tested part. It is not a complete description of conditions existing at or below ground level.

....1.4 RECORDS OF MEASUREMENT

Excavation and backfilling

Agreed quantities: If a schedule of rates applies, provisional quantities are specified, or there are variations to the contract levels or dimensions of excavations, do not commence backfilling or place permanent works in the excavation until the following have been agreed and recorded:

- Depths of excavations related to the datum.
- Final plan dimensions of excavations.
- Quantities of excavations in rock.

Method of measurement: To be by registered surveyor unless otherwise agreed.

Rock

Level and class: If rock is to be measured for payment purposes, whether as extra over excavation of material other than rock or for adjustment of provisional measurements, do not remove the rock until the commencing levels and the classes of rock have been determined.

....1.5 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Items to be measured as listed in *Records of measurement*.
- Areas to be cleared and/or stripped of topsoil.
- Areas stripped of topsoil.
- Excavation completed to contract levels or founding material.
- Proof roll subgrade prior to placing fill.
- Filling completed to contract levels.
- Stockpiled topsoil before spreading.

....1.6 TESTS

Geotechnical testing authority

General: Use a NATA registered geotechnical testing authority.

Compaction control tests

Compaction control tests: To AS 1289.5.4.1 or AS 1289.5.7.1.

Compaction control test frequency

Standard: To AS 3798 Table 8.1.

Site area > 1500 m²: At least (whichever requires the most tests):

- 1 test per layer per material type per 2500 m².
- 1 test per 500 m³ distributed evenly throughout full depth and area.
- 3 tests per lot.

Site area 500 – 1500 m²: At least (whichever requires the most tests):

- 1 test per layer per 1000 m².
- 1 test per 200 m³ distributed evenly throughout full depth and area.
- 1 test per residential lot per layer.

Site area < 500 m²: At least (whichever requires the most tests):

- 1 test per layer per 500 m².
- 1 test per 100 m³ distributed evenly throughout full depth and area.
- 3 tests per visit.

Confined operations: 1 test per 2 layers per 50 m².

....1.7 SUBMISSIONS

Tests

Imported fill: Submit certification or test results which establish the compliance of imported fill with the contract.

Compaction: Submit certification and/or test results in accordance with the specified level of responsibility to AS 3798.

Materials

General: Submit details of materials proposed, including the following:

- Sources of imported fill.

....1.8 TOLERANCES

Tolerances

Finish: Finish the surface to the required level, grade and shape within the following tolerances:

- Under building slabs and loadbearing elements: + 0, - 25 mm.
- Pavement subgrades; + 0, - 40 mm.
- Batters: No steeper than the slope shown on the drawings. Flatter slopes shall not impact on boundaries or required clearances to buildings, pavements or landscaping.
- Other ground surfaces: ± 50 mm, provided the area remains free draining and matches adjacent construction where required. Provide smoothness as normally produced by a scraper blade.

2 PRODUCTS

....2.1 FILL MATERIALS

Fill material generally

General: Inorganic, non-perishable material.

Sulphur content: Do not provide filling with sulphur content exceeding 0.5 % within 500 mm of cement bound elements (for example concrete structures or masonry) unless such elements are protected by impermeable membranes or equivalent means.

Excluded materials:

- Organic soils.
- Materials contaminated through past site usage.
- Materials which contain substances which can be dissolved or leached out, or which undergo volume change or loss of strength when disturbed and exposed to moisture.
- Silts or silt-like materials.
- Fill containing wood, metal, plastic, boulders or other deleterious material.

3 EXECUTION

....3.1 REMOVAL OF TOPSOIL

General

Extent: Areas to be cut and areas to be filled and areas to be occupied by structures, pavements, embankments and the like.

Maximum depth: 200 mm.

....3.2 EXCAVATION

Extent

Site surface: Excavate over the site to give correct levels and profiles as the basis for structures, pavements, filling and landscaping. Make allowance for compaction or settlement.

Footings: Excavate for footings, pits, wells and shafts, to the required sizes and depths. Confirm that bearing capacity is adequate.

Crawl space: Provide clear space under timber floor bearers.

- Minimum clearance: 400 mm.

Proof rolling

Extent: Proof roll excavations for pavements, filling and non-spanning slabs on ground to determine the extent of any bad ground.

Disposal of excess excavated material

General: Remove excess excavated material from the site and dispose of legally.

....3.3 BEARING SURFACES

General

General: Provide even plane bearing surfaces for loadbearing elements including footings. Step to accommodate level changes. Make the steps to the appropriate courses if supporting masonry.

....3.4 REINSTATEMENT OF EXCAVATION

General

Requirement: If the excavation exceeds the required depth, or deteriorates, reinstate to the correct depth, level and bearing value.

....3.5 SUPPORTING EXCAVATIONS

Removal of supports

General: Remove temporary supports progressively as backfilling proceeds.

Voids

General: Guard against the formation of voids outside sheeting or sheet piling if used. Fill and compact voids to a dry density similar to that of the surrounding material.

....3.6 ADJACENT STRUCTURES

Temporary supports

General: Provide supports to adjacent structures where necessary, sufficient to prevent damage arising from the works.

Lateral supports: Provide lateral support using shoring.

Vertical supports: Provide vertical support where necessary using piling or underpinning or both.

Permanent supports

General: If permanent supports for adjacent structures are necessary and are not described, give notice and obtain instructions.

....3.7 PREPARATION FOR FILLING

General

General: Prepare the ground surface before placing fill (including topsoil fill), ground slabs or load bearing elements. Shape to assist drainage. Remove materials which will inhibit or prevent satisfactory placement of fill layers, loose material, debris and organic matter. Compact the ground exposed after stripping or excavation in conformance with the **Compaction schedule**.

....3.8 PLACING FILL

General

Layers: Place fill in near-horizontal layers of uniform thickness, deposited systematically across the fill area.

Extent: Place and compact fill to the designated dimensions, levels, grades, and cross sections so that the surface is always self draining.

Edges: At junctions of fill and existing surfaces, do not feather the edges.

Mix: Place fill in a uniform mixture.

Previous fill: Before placing subsequent fill layers, ensure that previously accepted layers still conform to requirements, including moisture content.

Protection: Protect the works from damage due to compaction operations. Where necessary, limit the size of compaction equipment or compact by hand. Commence compacting each layer at the structure and proceed away from it.

Protective covering: Do not disturb or damage the protective covering of membranes during backfilling.

....3.9 PLACING TOPSOIL

Stockpiled topsoil

Cultivation: Rip to a depth of 100 mm or to the depth of rippable subgrade if less. Cultivate around services and tree roots by hand. Trim to allow for the required topsoil depth.

Herbicide: Apply before placing topsoil.

Placing: Spread and grade evenly.

Disposal of excess topsoil

On site: Dispose of surplus topsoil remaining on site by spreading evenly over the areas already placed.

Off site: Remove excess topsoil from the site and dispose of legally.

Compaction: Lightly compact topsoil so that the finished surface is smooth, free from lumps of soil, at the required level, ready for cultivation and planting.

Edges: Finish topsoil flush with abutting kerbs, mowing strips and paved surfaces. Feather edges into adjoining undisturbed ground.

....3.10 COMPACTION REQUIREMENTS FOR FILL AND SUBGRADE

Density

General: Other than rolled fill to AS 2870 clause 6.4.2(b). Compact the subgrade and each layer of fill to the required depth and density, as a systematic construction operation and to conform to the **Compaction table**. Shape surfaces to provide drainage and prevent ponding.

Compaction table

Location	Cohesive soils. Minimum dry density ratio (standard compaction) to AS 1289.5.4.1	Cohesionless soils. Minimum density index to AS 1289.5.6.1
Residential: Lot fill, house sites.	95	70
Commercial: Fills to support minor loadings incl. floor loadings < 20 kPa and isolated pad or strip footings < 100 kPa.	98	75
Pavements: Fill to support pavements Subgrade to 300 mm deep	95 98	70 75

Excavated and stripped ground surface: After excavation and/or stripping, these surfaces should also be compacted in conformance with the **Compaction table** to a minimum depth of 150 mm.

Maximum rock and lump size in layer after compaction: 2/3 compacted layer thickness.

Fill batter faces: Either compact separately, or overfill and cut back. Form roughened surfaces to the faces.

Moisture content

General: Adjust the moisture content of fill during compaction within the range of 85 – 115 % of the optimum moisture content determined by AS 1289.5.1.1 or AS 1289.5.2.1 as appropriate, in order to achieve the required density.

....3.11 COMPLETION

Temporary works

Tree enclosures: Remove temporary tree enclosures at completion.

Tree marking: Remove temporary marks and tags at completion.

Temporary supports: Remove temporary supports to adjacent structures at completion.

0224 STORMWATER – SITE**1 GENERAL****...1.1 AIMS****Responsibilities**

Selections: Conform to the **Selections**.

...1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

- Earthwork
- Pavement base and subbase
- Pavement ancillaries

...1.3 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given below apply.

- Pipe surround: Includes pipe overlay, pipe side support, side zone and haunch zone.

...1.4 STANDARDS**Stormwater drainage**

Standard: To AS/NZS 3500.3.

...1.5 INSPECTION**Notice**

Inspection: Give notice so that inspection may be made of the following:

- Excavated surfaces prior to placing pipe bedding material.
- Formwork and reinforcement prior to placing cast in situ concrete.
- Pipe joints prior to covering.
- Placing of cast in situ concrete.
- Upon completion.

...1.6 SUBMISSIONS**Samples**

General: Submit samples of the following:

- Each type of imported pipe bedding material.
- Each type of filter material.

Products – documentation

Conformance: Produce documentary evidence that the pipes conform to the requirements of this worksection.

2 PRODUCTS**...2.1 MATERIALS****Concrete and mortar**

Concrete: To AS 1379.

- Grade: N20.

Cement: To AS 3972.

- Type: GP or GB.

Steel reinforcement:

- Bars and machine welded mesh: To AS/NZS 4671.

Joints

Solvent cement and priming fluid: To AS/NZS 3879.

Pipe and fittings

Fibre reinforced cement (FRC): To AS 4139.

- < 450 mm diameter: To be pre-socketed at one end with a factory fitted *Adcol* coupling.
- > 450 mm diameter: To have a purpose machined internal spigot and socket system within the pipe wall.

Glass-reinforced polyester (GRP): To AS 3571.

Cast iron manhole covers and frames: To AS 1830 and AS 1831, as appropriate.

Polyvinyl chloride (PVC): To AS 1254, AS/NZS 1260, AS 1273.

Polyethylene (PE): To AS/NZS 4129, AS/NZS 4130 or ISO 8770, AS 2033.

Precast concrete: To AS 4058.

Rubber ring joints/elastomeric seals: To AS 1646.

Subsoil: To AS 2439.1.

Vitrified clay or ceramic: To AS 1741.

Bedding material

General: Bedding material for the bed and haunch zones shall consist of a granular material having a grading, determined by AS 1141.

Conformance: Comply with the **Bedding material grading table**.

Bedding material grading table

Sieve size (mm)	Weight passing %	
	Bed and haunch	Side zones
75.0	-	100
19.0	100	-
9.5	-	50-100
2.36	50-100	30-100
0.60	20-90	15-50
0.30	10-60	-
0.15	0-25	-
0.075	0-10	0-25

3 EXECUTION

...3.1 TOLERANCES

General

General: Conform to the **Pipeline tolerances table**. These tolerances are conditional on falls to outlets being maintained and no part of a pipeline being at less than the designated gradient.

Pipeline tolerances table

	Permissible angular deviation from alignment	Permissible displacement from alignment
Horizontal	1 in 300	15 mm
Vertical	1 in 500	5 mm

...3.2 STORMWATER DRAINS

Location

General: Provide stormwater drains to connect downpipes, surface drains, subsoil drains and drainage pits to the outlet point or point of connection. Make sure that location of piping will not interfere with other services and building elements not yet installed or built. Subject to the preceding and documented layouts, follow the most direct route with the least number of changes in direction.

Downpipe connections: Turn up branch pipelines with bends to meet the downpipe, finishing 50 mm (nominal) above finished ground or pavement level. Seal joints between downpipes and drains.

Laying

General: Lay in straight lines between changes in direction or grade with socket end placed upstream. If other pipes are adjacent, set each pipe true to line and complete each joint before laying the next pipe. If work is not continuous cap open ends to prevent entry of foreign matter.

Bedding

General: Grade the underlay evenly to the gradient of the pipeline.

Standard: In accordance with AS/NZS 3725 and AS/NZS 3725 Supplement 1.

Layers: All material shall be compacted in layers not exceeding 150 mm compacted thickness.

Lifting holes

General: Lifting holes in all pipes shall be sealed with plastic preformed plugs or 3:1 sand:cement mortar, before the commencement of backfilling.

Trench backfill

General: The remainder of the trench to the underside of the subgrade shall be backfilled with fill material in accordance with the *Earthwork* worksection.

Anchor blocks

General: If necessary to restrain lateral and axial movement of the stormwater pipes provide anchor blocks at junctions and changes of grade or direction.

Encasement

General: Conform to the **Stormwater pipeline schedule**.

Location: Encase the pipeline in concrete at least 150 mm above and below the pipe, and 150 mm each side or the width of the trench, whichever is the greater.

...3.3 SUBSOIL DRAINS

General

General: Provide subsoil drains to intercept groundwater seepage and prevent water build-up behind walls and under floors and pavements. Connect subsoil drains to surface drains or to the stormwater drainage system as applicable. Conform to the **Subsoil pipeline schedule**.

Trench width: ≥ 450 mm.

Pipe depth: Provide the following minimum clear depths, measured to the crown of the pipe, where the pipe passes below the following elements:

- 100 mm below subgrade level of the pavement, kerb or channel.
- 100 mm below the average gradient of the bottom of footings.
- 450 mm below the finished surface of unpaved ground.

Jointing

General: At junctions of subsoil pipes provide tees, couplings or adaptors to AS 2439.1.

Pipe underlay

General: Grade the trench floor evenly to the gradient of the pipeline. If the trench floor is rock, correct any irregularities with compacted bedding material. Bed piping on a continuous underlay of bedding material, at least 75 mm thick after compaction. Lay the pipe with one line of perforations at the bottom.

Chases: If necessary, form chases to prevent projections such as sockets and flanges from bearing on the trench bottom or underlay.

Pipe surrounds

General: Place the material in the pipe surround in layers ≤ 200 mm loose thickness, and compact without damaging or displacing the piping.

Depth of overlay:

- To the underside of the bases of overlying structures such as pavements, slabs and channels.
- To within 150 mm of the finished surface of unpaved or landscaped areas.

Filter fabric

General: Provide polymeric fabric formed from plastic yarn composed of at least 85% by weight propylene, ethylene, amide or vinylidenechloride, and containing stabilisers or inhibitors which provide resistance to deterioration due to ultraviolet light.

Marking: To AS 3705.

Protection: Provide heavy duty protective covering. Store clear of the ground and out of direct sunlight. During installation do not expose the filter fabric to sunlight for more than 14 days.

Filter socks

General: Provide polyester permeable socks capable of retaining particles of 0.25 mm size. Securely fit or join the sock at each joint.

...3.4 PITS

Finish to exposed surfaces

General: Provide a smooth, seamless finish, using steel trowelled render or concrete cast in steel forms.

Corners: Cove or splay internal corners.

Metal access covers and grates

Standard: To AS 3996.

Cover levels: Top of cover or grate, including frame:

- In paved areas: Flush with the paving surface.
- In landscaped areas: 25 mm above finished surface.
- Gratings taking surface water runoff: Locate to receive runoff without ponding.

...3.5 TESTING

Pre-completion tests

General: Before backfilling or concealing, carry out the following tests:

- Site stormwater drains and main internal drains: Air or water pressure test to AS 3500.3 Section 10.

Leaks: If leaks are found, rectify and re-test.

...3.6 COMPLETION

Cleaning

General: Clean and flush the whole installation.

0271 PAVEMENT BASE AND SUBBASE**1 GENERAL****....1.1 AIMS****Responsibilities**

General: Provide base and subbase courses that are as follows:

- In conformance with the level tolerances specified.
- Tested by a geotechnical testing authority.
- In conformance with the compaction requirements supplied.

....1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Earthwork*.
- *Stormwater – Site*.
- *Pavement ancillaries*
- *Asphaltic Concrete*

....1.3 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given below apply.

- Standard: To AS 1348.
- Absolute level tolerance: Maximum deviation from design levels.
- Relative level tolerance: Maximum deviation from a 3 m straight edge laid on the surface.

....1.4 INSPECTION**Notice**

Inspection: Give notice so that inspection may be made of the following:

- Prepared subgrade.
- Proof rolling of subbase prior to spreading of base.
- Proof rolling of base prior to sealing.

....1.5 TESTS**Compaction control tests**

Standard: To AS 1289.5.4.1 and AS 1289.5.4.2.

....1.6 SUBMISSIONS**Frequency of compaction control tests**

General: Not less than the following (whichever requires the most tests):

- 1 test per layer per 25 lineal metres for 2-lane roads.
- 1 test per layer per 1000 m² for carparks.
- 3 tests per layer.
- 3 tests per visit.

Source of material: State the supplier name, nature of material (crushed rock, natural gravel, recycled, etc.) and source quarry or recycling site.

Compliance of material: Provide certification and test results from a NATA registered laboratory confirming that the material complies with the requirements of the specification.

Execution

General: Submit proposals for the methods and equipment to be used for the roadworks, including the following:

- Staging of the work, access and traffic control methods.
- Disposal of surface water, control of erosion, contamination and sedimentation of the site, surrounding areas and drainage systems.
- Methods and equipment for each operation.
- Sources of materials.
- Material stockpiles.

Compaction: If it is proposed that a layer is to exceed 150 mm in thickness, submit evidence demonstrating that the proposed compaction equipment can achieve the required density throughout the layer.

2 PRODUCTS

....2.1 BASE AND SUBBASE MATERIAL

General

Compliance: Base and subbase materials shall comply with the **Base and subbase compliance table**.

Base and subbase compliance table

Course	Source	Compliance requirement
Base	Crushed rock or natural gravel	To AUS-SPEC1 (applicable in your state) Tables C242.1, C242.2, C242.3.
Subbase	Crushed rock or natural gravel	AUS-SPEC1 (applicable in your state) Tables C242.1, C242.2, C242.4.

3 EXECUTION

....3.1 SUBGRADE PREPARATION

General

General: Subgrade preparation to be undertaken in accordance with the *Earthwork* worksection.

....3.2 TOLERANCES

Surface level

General: Provide a finished surface which is free draining and evenly graded between level points.

Edges abutting gutters: Within ± 5 mm of the level of the actual gutter edge.

Tolerances: The tolerances in the **Surface level tolerances table** apply to the finished level of each layer, unless overridden by the requirements (including tolerances) for the finished level and thickness of the wearing course.

Surface level tolerances table

Item	Level tolerance	
	Absolute	Relative
Subbase surface	± 10 mm	10 mm
Base surface	± 10 mm	10 mm

....3.3 SUBBASE AND BASE COMPACTION

General

General: Compact each layer of fill to the required depth and density, as a systematic construction operation and to conform to the minimum relative compaction table.

Minimum relative compaction table

Item description	Minimum dry density ratio (modified compaction) to AS 1289.5.2.1
Subbase	95
Base	98

Unstable areas: Any unstable areas which develop during rolling or are identified by proof rolling shall be removed for the full depth of the layer and disposed of and replaced with fresh material. Materials used as replacement materials shall comply with the requirements of the specification. The placing and compaction of the replacement materials shall also comply with the requirements of the specification.

Compaction requirements

General: Apply uniform and sufficient compactive effort over the whole area to be compacted. Use rollers appropriate to the materials and compaction requirements.

Moisture content

General: During spreading and compaction, maintain materials at the optimum moisture content (modified compaction) within the range of -2% to +1% from the optimum moisture content.

Spraying: Maintain moisture content. Use water spraying equipment capable of distributing water uniformly in controlled quantities over uniform lane widths.

Rectification

General: If a section of pavement material fails to meet the required density or moisture content after compaction remove the non-complying material, replace with fresh material, and recompact.

Level corrections

General: Rectify incorrect levels as follows:

- High areas: Grade off.
- Low areas: Remove layers to a minimum depth of 75 mm, replace with new material and recompact.

....3.4 PLACING BASE AND SUBBASE

General

Weak surfaces: Do not place material on a surface which has been so weakened by moisture that it will not support, without damage, the constructional plant required to perform the work.

Spreading: Spread material in uniform layers without segregation.

Moisture content: Maintain wet mixed materials at the required moisture content before and during spreading. Add water to dry mixed materials through fine sprays to the entire surface of the layer after spreading, to bring the material to the required moisture content.

Layer thickness: 150 mm maximum and 75 mm minimum (after compaction). Provide equal layers in multilayer courses.

Joints

General: Plan spreading and delivery to minimise the number of joints. Offset joints in successive layers by at least 300 mm.

Final trimming

General: Trim and grade the base course to produce a tight even surface without loose stones or a slurry of fines.

0277 PAVEMENT ANCILLARIES**1 GENERAL****...1.1 AIMS****Responsibilities**

General: Provide channels, kerbs and linemarking.

Selections: Conform to **Execution**.

...1.2 CROSS REFERENCES**General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Earthwork*.
- *Pavement base and subbase*.

...1.3 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions of AS 1348 and those given below apply.

- Absolute level tolerance: Maximum deviation from design levels.
- Relative level tolerance: Maximum deviation from a 3 m straightedge laid on the surface
- Channels and kerbs: Includes all forms of concrete gutters, dish drains, grated drains and mountable median and barrier kerbing.

...1.4 SUBMISSIONS**Linemarking materials**

General: Submit NATA Registered Laboratory Test Reports, at least seven days before work is scheduled to commence, on the properties of the materials, including paint.

2 PRODUCTS**...2.1 MATERIALS****Concrete**

Standard: To AS 1379 – Grade N20.

Pavement marking paint

Standard: To AS 4049.1, AS 4049.3 and AS 4049.4.

...2.2 VEHICLE BARRIERS**Log barriers**

Material: Sawn hardwood, or preservative-treated radiata posts and rails to AS 1604.1.

Size: Diameter range 125 – 150 mm.

Precast concrete wheel stops

Material: Precast concrete units with predrilled holes located 300 mm from each end for fixing to ground surface.

Size: 2000 x 150 x 100 mm high.

Steel tube bollards

Type: Bollards fabricated from heavy steel tube, to minimum nominal size DN 100, to AS 1074. Seal free ends with fabricated end caps, spot welded and ground smooth.

Finish: Galvanize after fabrication.

3 EXECUTION

...3.1 LINEMARKING

Setting out

General: Set out the work to ensure that all markings are placed in accordance with the drawings.

Surface preparation

Surface: Clean, dry and free of any deposit which may impair adhesion of the paint finish.

Wet weather: Do not apply pavement marking during wet weather or if rain is likely to fall during the process or paint drying time.

Scabbling: Scabble the full area of concrete wearing surfaces to raised pavement markers and remove fine mortar material.

Provision for traffic: Allow for traffic during application and protect pavement markings until the material has hardened sufficiently to carry traffic without damage.

Mixing of paint: Mix all paint in its original container before use and produce a smooth uniform product consistent with the freshly manufactured product.

Application of paint

Longitudinal lines: Spray all longitudinal lines with a self propelled machine. Spray concurrently the two sets of lines forming a one-way or two-way barrier line pattern.

Hand spraying: Hand spray transverse lines, symbols, legends, arrows and chevrons with templates.

Paint thickness: Uniform wet film thickness: ≥ 0.35 mm to ≤ 0.40 mm.

Pavement markings: Straight or with smooth, even curves where intended.

Edges: Clean with a sharp cut off. Remove any marking material applied beyond the defined edge of the marking and leave a neat and smooth marking on the wearing surface of the pavement.

Tolerances

Longitudinal line lengths: Do not vary by more than 20 mm from the lengths shown in AS 1742.2.

Longitudinal line widths: Do not vary by more than 10 mm from the widths shown in AS 1742.2.

Transverse line lengths and widths: Do not vary by more than 10 mm from the lengths and widths shown in AS 1742.2.

Dimensions: Do not vary the dimensions of arrows, chevrons, painted medians, painted left turn islands and speed markings by more than 50 mm from the dimensions shown on the drawings or in AS 1742.2 as appropriate. Place arrows and speed markings square with the centreline of the traffic lane.

Removal of pavement markings

General: Remove pavement markings, no longer required, from the wearing surface of pavements without significant damage to the surface.

...3.2 CHANNELS AND KERBS

Foundation preparation

Foundation material: Shape and compact to form a firm base before placing any kerb and/or gutter.

Construction not on a pavement course: Relative compaction To AS 2876.

Construction on a pavement course: To the requirements of the *Pavement base and subbase* worksection.

Standard: Construct kerb and/or gutters in fixed forms, by extrusion or by slip forming to AS 2876.

Foundation, concrete quality, curing and testing details: To AS 2876.

Tolerances

Design level deviation at any point on the surface of gutters: ± 10 mm.

Surface deviation to top or face of kerbs, and to the surface of gutters: 5 mm in 3000 mm.

Design alignment deviation: 25 mm.

Exception: Kerb laybacks, grade changes or curves, or at gully pits requiring gutter depression.

Joints

Standard: To AS 2876.

Concrete pavement: Where kerbs and/or gutters are cast adjacent with a concrete pavement the same type of contraction, construction and expansion joints specified in the concrete pavement shall be continued across the kerb and/or gutter.

Backfill

Timing: Not earlier than three days after placing kerb and gutter concrete, backfill and reinstate the spaces on both sides of the kerb and/or gutters.

Material: Granular material, free of organic material, clay and rock in excess of 50 mm diameter.

Compaction: Compact backfilling in layers not greater than 150 mm thick, to a relative compaction of 95% when tested in accordance with AS 1289.5.4.1, for standard compactive effort.

Pavement: Backfill pavement material adjacent to new gutter in accordance with the drawings and the *Pavement base and subbase* worksection.

...3.3 VEHICLE BARRIERS**Log barriers**

Installation: Check out the posts to receive the rails. Set each post 600 mm into the ground and surround with compacted fine crushed rock, gravel or cement stabilised rammed earth. Bolt rails to posts with M12 diameter galvanized bolts and washers, with bolt heads and nuts recessed.

Precast concrete wheel stops

Installation: Drive 12 mm diameter galvanized steel rods 600 mm into the ground to finish 25 mm below the top of the wheel stop, or bolt the stop to masonry anchors in concrete slabs. Grout the holes flush to match the concrete finish.

Steel tube bollards

Footings: Encase in a concrete footing at least 600 mm deep x 250 mm diameter.

On slabs: Weld on a 10 mm thick baseplate drilled for 4 bolts, and bolt to masonry anchors.

Filling: Fill the tube with 15 MPa concrete.

0272 ASPHALTIC CONCRETE

1 GENERAL

...1.1 AIMS

Responsibilities

General: Provide a finished surface which is as follows:

- Free draining and evenly graded between level points.
- Even and smooth riding

Selections: Conform to the **Selections**.

Standards

Hot mix asphalt: Comply with the recommendations of AS 2150.

Tolerances

General: Conform to the **Surface level tolerances table** which applies to the finished level of each layer, unless overridden by the requirements (including tolerances) for the finished level and thickness of the surface course.

Surface level tolerances table

Item	Level tolerance	
	Absolute	Relative
Longitudinal direction	± 10 mm	5 mm
Transverse direction	± 10 mm	10 mm

Compacted layer thickness:

- Any one sample: + 10 mm, - 5 mm.
- The mean thickness of the core samples in a lot: + unspecified, - 0.

Edges abutting gutters: Within ± 5 mm of the level of the actual gutter edge.

...1.2 CROSS REFERENCES

General

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Earthwork*.
- *Stormwater – site*.
- *Pavement base and subbase*.
- *Pavement ancillaries*.

...1.3 INTERPRETATION

Definitions

General: For the purposes of this worksection the definitions given below apply.

- Absolute level tolerance: Maximum deviation from design levels.
- Relative level tolerance: Maximum deviation from a 3 m straightedge laid on the surface.
- Relative compaction: The ratio between the field bulk density and the bulk density of the job mix when compacted in the laboratory.

...1.4 INSPECTION

Notice

Inspection: Give notice so that inspection may be made of the following:

- Surface prepared for priming, sealing or asphalt surfacing.
- Commencement of asphalt surfacing.
- Completion of asphalt surfacing.

...1.5 TESTS

General

Tests: Perform tests of the type and frequency necessary to adequately control the materials and processes used in the construction of the works and in conformance with the **Tests table**.

Process control tests

Records: Show the results of process control tests on control charts or graphs displayed on site in a readily accessible location and updated daily.

Methods: Use wet preparation methods where applicable.

Sampling: Determine timing and location.

Compliance assessment tests

Timing: Obtain materials samples at the time of delivery to the site.

Location: Sample from selected sample sites within designated uniform test lots, consisting of an area placed, or compacted or both in one day. Test lots must be uniform in terms of material properties and density.

Mix properties

General: Take samples from trucks at the mixing plant and test for mix properties using one of the following methods as applicable:

- Marshall stability of compacted mix:
- Compactive effort: 50 – blow.

Variations in mix properties

General: Ensure that the maximum variation between the mix property of each sample and the job mix value conforms to the **Mix property table**.

Mix property table

Mix property	Maximum variation from job mix value
Aggregate passing 4.75 mm sieve or larger	± 4% by mass
Aggregate passing 2.36mm to 300µm sieves	± 3% by mass
Aggregate passing 150µm sieve	± 2% by mass
Aggregate passing 75µm sieve	± 1% by mass
Bitumen content	± 0.3% by mass
Added filler content	± 0.5% by mass
Mixing temperature	± 10°C

Compaction tests

Density tests: Perform a field bulk density test for each test site from either of the following:

- On a core sample taken from the asphalt surfacing layer.
- If the nominal layer thickness is ≥ 50 mm, measured in situ using a nuclear gauge.

Sample preparation: To AS 2891.2.1 and AS 2891.2.2, as applicable.

Characteristic value of relative compaction: Calculate the value of relative compaction using the formulae in the **Relative compaction table**, in which X and S are the mean and the standard deviation, respectively of the individual relative compaction test values for the lot.

Relative compaction table

Number of tests per lot	Characteristic value
6	$X - 0.92S$
10	$X - 0.88S$

Acceptance criteria: The relative compaction of each lot of pavement must meet the criteria of the **Asphalt compaction acceptance criteria table**.

Asphalt compaction acceptance criteria table

	Test criteria scale	
	A	B
Number of test sites per lot: Core sample tests	6	3
Nuclear gauge tests	10	5
Lot value for relative compaction	Characteristic value	Mean value
Minimum value: Layer thickness up to 50 mm	96%	94%
Layer thickness 50 mm or more	96%	96%

...1.6 SUBMISSIONS**Products – documentation**

Certificate of compliance: As an alternative to testing a product, submit the manufacturer's certificate together with the results of recent tests undertaken by the manufacturer, showing conformance with test criteria.

Products – proposals

General: Submit the following details before commencing production:

- Combined aggregate particle size distribution.
- Binder content expressed as a percentage of the total mix.
- The filler content expressed as a percentage by mass of the combined aggregates.
- The asphalt mix properties.
- The proposed mixing temperature.

Products – samples

Samples: Submit samples of the following at least one month before use:

- Granular materials: One 50 kg sample of each proposed type and size of asphalt aggregate and cover aggregate.

Identification: Attach a tag to each sample showing relevant information including description, source and nominal size of material.

Execution – proposals

General: Submit proposals for the methods and equipment to be used, including the following:

- Staging of the work, access and traffic control methods.
- Disposal of surface water, control of erosion, contamination and sedimentation of the site, surrounding areas and drainage systems.
- Methods and equipment for each operation.
- Sources of materials.
- Material stockpiles.

2 PRODUCTS**...2.1 MATERIALS****Asphalt**

Standards:

- Hot mix asphalt: To AS 2150.
- Medium cut back bitumen: To AS 2157, containing no fluxing oil.
- Tack coat mix: 3:2 bitumen emulsion:water.
- Bitumen emulsion: To AS 1160.
- Designation: ARS/170-60.

Aggregate

Description: To be clean, sound, hard, angular, of uniform quality, free from deleterious matter in conformance with the **Aggregate properties table**.

Standard: To AS 2758.5.

Crushed slag: To be air-cooled blast furnace slag of uniform quality, generally free from vesicular, glassy or other brittle pieces.

Fine aggregate: To be clean, sound, hard, durable particles of natural sand or particles derived from crushed stone, gravel or slag, free from injurious coating or particles of clay, silt, loam or other deleterious matter.

Aggregate properties table

Property	Test method	Value
Particle shape	AS 1141.14	≤ 25 for wearing course ≤ 30 for binder course and corrective course
Wet strength	AS 1141.22	≥ 50 kN
Wet/dry strength variation	-	≤ 35%

Binder

General: To be bitumen binder, class 170.

Asphalt mix

General: Design the asphalt mix using the Marshall method as follows:

- Marshall stability: > 4.5 kN.
- Marshall flow: < 4.5 mm.
- Voids in total mix (maximum theoretical density based on apparent specific gravity of aggregates):
 - Wearing courses: 3% – 5%.
 - Binder courses and 7 mm mixes: 4% – 6%.
- Voids in aggregate filled with bitumen:
 - Wearing courses: 75% – 85%.
 - Binder courses and 7 mm mixes: 70% – 80%.

3 EXECUTION**...3.1 PREPARATION****Cleaning**

General: Immediately before priming or tack coating remove loose stones, dust and foreign material from the base surface using a power broom or blower. Keep traffic off the cleaned surface.

Priming

General: Prime the base surface as soon as possible after compaction and finishing.

Potholes

General: Trim to a regular shape and a uniform depth of at least 75 mm, tack coat the edges and patch with asphaltic concrete.

...3.2 SURFACING**Protection**

General: Protect adjacent surfaces during spraying. Protect freshly sprayed surfaces from contamination.

Tack coating

General: Apply tack coat 30 – 120 minutes before asphalt surfacing is placed. Cover the surface uniformly at an application rate of 0.10 – 0.30 L/m² of residual bitumen.

Spreading

General: Place asphalt surfacing in dry weather on a dry pavement surface at a pavement temperature

of at least 10°C.

Operations: Spread the mix in layers covering the full width of the pavement, or, in the case of carriageways and wide pavements, in lanes of minimum width 3 m. Place layers in adjoining lanes to the same compacted thickness.

Abutting structures

General: Place asphalt surfacing to match the level of abutting surfaces such as kerbs, gutters, edge strips, manholes, or adjoining pavement in the same manner as for longitudinal and transverse joints. Fill spaces left unfilled between the spreader run and abutting edges with sufficient material to the proper height before compaction.

Matched junctions

General: If asphalt surfacing is to match an existing pavement, bridge deck, rail or other fixture, place the material to provide a smooth riding surface across the junction. Where necessary, remove sufficient of the existing pavement for this purpose. Where it is necessary to taper the thickness of a layer to provide a smooth riding junction, terminate the layer at a chase cut into the existing pavement about 20 mm deep and 400 mm wide. Where necessary, remove coarse particles from a layer of tapering thickness using hand raking.

Tack coat: Where the thickness of the layer tapers to less than twice the nominal size of the mix, tack coat the area upon which material of such thickness is to be placed uniformly at an application rate 0.50 - 0.75 L/m².

Compaction

General: Before commencing compaction, correct any irregularities in line or level. Trim lane edges to a straight line. Compact asphalt surfacing uniformly as soon as it will support rollers without undue displacement, and complete rolling while the mix temperature is above 80°C.

...3.3 JOINTS

Joints

General: Minimise the number of joints. Make joints that are well bonded and sealed and provide a smooth riding surface across the joint.

Transverse joints: Construct a transverse joint if the operation is stopped for more than 20 minutes or the pavement temperature falls below 90°C. Construct to a straight vertical face for the full depth of the layer, and offset in adjoining spreader runs and layer to layer by at least 2 m.

Longitudinal joints: Offset joints from layer to layer by at least 150 mm. Position longitudinal joints in the wearing course to coincide with the lane line.

Edges: Form exposed edges of each spreader run while hot to a straight line with a dense face inclined between vertical and 45°.

Cold joints: Tack coat the surface of cold longitudinal and transverse joint before placing the adjoining asphalt.

...3.4 COMPLETION

Defective compaction

Minimum criteria for retention:

- Characteristic value of relative compaction of the lot: $\geq 90\%$.
- Mean of the individual relative compaction test values of the lot: $\geq 90\%$.

Defective layer thickness

Minimum criterion for retention:

- Mean thickness of the core sample in the lot: ≤ 10 mm below the required layer thickness.

Rejection

Extent: Remove areas of rejected asphalt surfacing, including defective joints and finish, to the full depth of the layer, and replace with complying pavement.

Joints: Treat edges of remedial work as specified for cold joints.

Reinstating adjacent surfaces

General: Reinststate surfaces next to new pavements and associated elements. Where an existing flexible road pavement has been disturbed, trim it back to a straight and undisturbed edge 250 – 300 mm from and parallel to the new concrete for the full depth of the slab. Backfill with asphalt rammed solid, using suitable rammers.

Traffic on pavement

General: Give notice before opening the pavement to traffic before the work is completed. Provide adequate means of protection.

Junctions with existing pavements

Trimming: Where the pavement is to be joined to an existing pavement remove a strip of the existing pavement at least 300 mm wide for its full depth and trim the edge to an angle of approximately 45° in steps of maximum height 150 mm before placing new pavement material.

Existing sealed pavement: Trim the seal to a neat edge.

0273 SPRAYED BITUMINOUS SURFACING**1 GENERAL****...1.1 CROSS REFERENCES****General**

General: Conform to the *General requirements* worksection.

Associated worksections

Associated worksections: Conform to the following:

- *Earthwork*.
- *Stormwater – Site*.
- *Pavement base and subbase*.
- *Pavement ancillaries*.

...1.2 INTERPRETATION**Definitions**

General: For the purposes of this worksection the definitions given below apply.

Standard: To AS 1348.

Absolute level tolerance: Maximum deviation from design levels.

Relative level tolerance: Maximum deviation from a 3 m straightedge laid on the surface.

...1.3 INSPECTION**Notice**

Inspection: Give notice so that inspection may be made of the following:

- Surfaces prepared for priming, sealing or surfacing.
- Commencement of bituminous spraying.

...1.4 TESTS**General**

Standards: Testing of materials shall be in accordance with the relevant materials standards referred to in this specification, by a NATA registered laboratory.

...1.5 SAMPLES**General**

Standards: Sampling of materials shall be in accordance with the relevant materials standards referred to in this specification, by a NATA registered laboratory.

...1.6 SUBMISSIONS**Tests**

Compliance assessment: If compliance assessment tests are to be carried out by an independent testing authority, have the authority submit 3 copies of each test result.

Certificate of compliance: If a certificate of compliance is acceptable as an alternative to testing a manufactured material, submit the manufacturer's certificate together with the results of recent tests undertaken by the manufacturer, showing compliance with test criteria.

Execution

General: Submit proposals for the methods and equipment to be used for the roadworks, including the following:

- Staging of the work, access and traffic control methods.
- Disposal of surface water, control of erosion, contamination and sedimentation of the site, surrounding areas and drainage systems.

- Methods and equipment for each operation.
- Sources of materials.
- Material stockpiles.

Spraying equipment: Submit a current certificate and calibration chart issued by the state road authority.

Hand spraying: If intended, submit proposals.

Spraying: Submit proposals for start, finish and width of each spray run.

Records of measurement

Records: Submit certified records of work performed.

2 PRODUCTS

...2.1 MATERIALS

Material grades

Bitumen: To AS 2008 Class 170.

Bitumen emulsion: To AS 1160.

Cut back bitumen: To AS 2157.

Cover aggregate

Standard: To AS 2758.2.

- Precoating agent: Precoating agents shall be capable of satisfying plate stripping tests. The percentage of stripping shall not exceed 10% in accordance with AS 1141.50.

...2.2 MEASURING MATERIALS

Bitumen and cutter

General: Measure by volume at 15°C.

Temperatures higher than 15°C: Use the *Bitumen volume conversion formula* for primers and binders, where T is the temperature of the material at which the volume has been measured. For calculation purposes, assume that the conversion factors are the same for bitumen, bituminous mixes and cutter.

Bitumen volume conversion formula: $\text{Volume at } 15^{\circ}\text{C} = \text{Volume at } T^{\circ}\text{C} \times (1 - (T - 15)/1667)$.

3 EXECUTION

...3.1 TOLERANCES

Finished levels

General: Provide a finished surface which is free draining and evenly graded between level points.

Edges abutting gutters: Within ± 5 mm of the level of the actual gutter edge.

...3.2 PRECOATING

General

General: Precoat sealing aggregates immediately before the aggregate is loaded into the spreader trucks.

7 mm cover aggregate: Precoat at least 48 hours in advance of spreading.

Preconditions

General: Prime and seal in dry and reasonably calm weather, on a dry pavement surface at a temperature of at least 15°C.

Application

General: Apply precoating agent thinly and evenly using a fine pressure spray to a moving stream of aggregate, or by other suitable means, so that particles are fully coated but without excess material.

Wet aggregate: If the aggregate is too wet to precoat, or contains enough moisture to cause uneven distribution of the precoating agent, dry the aggregate by turning the stockpile over. Do not provide

precoated aggregate containing moisture until the moisture has evaporated and the precoating agent has adhered efficiently.

Application rate: In the range 3 – 10 L/m³ of aggregate.

...3.3 CUTTING BITUMEN

Generally

Temperature: Heat sufficient bitumen for immediate needs only. Do not keep the material at spraying temperature for longer than 10 hours. Do not reheat.

Mixing and heating (on site)

General: Heat the bitumen at a rate not exceeding 40°C/h, and circulate cutback bitumen for 20 minutes to ensure thorough mixing.

Heating devices

General: Use devices capable of uniform heating without damaging bituminous materials.

...3.4 SPRAYING EQUIPMENT

Hand spraying

Areas not accessible to the mechanical sprayer: Spray using hand spray equipment attached to the mechanical sprayer.

...3.5 PREPARATION FOR SPRAYING

Cleaning

General: Immediately before spraying remove loose and foreign material on the finished base surface, including dust, debris and sand spread on primed surfaces, and until a mosaic of well embedded stone shows on the surface. Keep traffic off the cleaned surface.

Method: Use suitable power blowers or power brooms (or using hand methods where inaccessible to the power equipment).

Potholes

General: Trim to a regular shape and a uniform depth of at least 75 mm. Tack coat the sides, and patch with a suitable bituminous premix, sanded after completion. Allow sufficient time for the premix to cure before spraying the surface.

...3.6 SPRAYING OPERATIONS

Protection

General: Protect adjacent surfaces during spraying. Place drip trays under spray bars when the sprayer is stationary. Clean bituminous materials from adjacent surfaces or, if this is not possible, replace and make good the surface. Protect freshly sprayed surfaces from contamination.

Spraying

General: Completely and uniformly cover the surface to be treated. Prevent the spray overlapping previously treated areas, except that where part-width spraying is used, lap the longitudinal joint between adjacent runs by 50 mm.

Priming

General: Prime the granular pavement to achieve and maintain a strong bond between granular surface and pavement treatment seal.

Edges: At underbed edges, extend the primer 150 mm beyond the edge of the seal.

Sealing and primersealing

Process: Allow at least 3 days between priming and sealing and between first and second seals. Incorporate the first course of aggregate thoroughly into the binder before a second course is applied. Remove loose particles from the sealed area by sweeping lightly, without disturbing embedded aggregate.

Spraying temperature ranges:

- Bitumen without cutter: 160 – 190°C.
- Primerbinder Grade AMC3: 95 – 115°C.
- Bitumen emulsion binder: Ambient temperature.

Application rates

General: Comply with the **Sprayed bituminous road surfacing schedule**.

Sprayed bituminous road surfacing schedule

Operation	Primer or binder			Cover aggregate	
	Material	Grade or class	Application rate at 15°C (L/m ²)	Size (mm)	Spread rate (m ² /m ³)
Priming	Primer	AMC1	1.0	-	-
Primersealing	Primerbinder	AMC3	1.5	7 10	100 80
First sealing	Residual bitumen binder		1.0	14	80
Second sealing	Residual bitumen binder		0.5	7	160
Single sealing/ resealing	Residual bitumen binder		0.75 1.6	10 20	120 60
Bituminous emulsion sealing	Bituminous emulsion		1.1 1.4	7 10	160 120

...3.7 PLACING COVER AGGREGATE**Placing cover aggregate**

Spreading: Immediately after the binder or primerbinder has been sprayed, cover with a uniform layer of dry aggregate.

Rolling: Immediately after spreading roll and drag broom the area until it is uniformly covered with aggregate thoroughly embedded in the binder. Roll uniformly over the whole area. Complete rolling as soon as possible but not later than 3 days after spraying.

Steel rolling

General: Roll using a maximum of two coverages of a steel-wheeled roller of maximum axle load 5 tonne. Discontinue steel rolling if aggregate shows signs of breaking down.

Pneumatic tyred rolling

Roller: After steel rolling, roll the area using a pneumatic-tyred roller of minimum mass 10 t and with tyre pressures adjustable in the range 550 – 700 kPa.

Rolling:

- Minimum rate: 4 roller hours per 4500 L of binder or primerbinder sprayed.
- Timing: At least one roller pass within 2 minutes of covering, over the whole of the area. After an initial slow pass increase the speed of rolling to the maximum practicable for the area being sealed. Complete at least 25% of the rolling within 2 hours of covering, and 50% within 24 hours of covering. Roll during daylight hours.

Loose aggregate

General: When the aggregate has been evenly spread and embedded, remove loose particles remaining on the pavement and apply additional aggregate as required.

Surface finish

General: Provide an even, smooth riding and free draining surface.

...3.8 DEFECTIVE SURFACING**Primer**

Actual rate of application < 90% of that ordered: Make up the deficiency with a second spray run.

Actual rate of application > 110% of that ordered: Cover the surface with sand.

Binder and primerbinder

Actual rate of application < 90% or > 110% of that ordered: Reseal the surface.

Minimum criteria for retention

Actual rate of application: 90 – 110% of that ordered.

...3.9 JUNCTIONS WITH EXISTING PAVEMENTS

Junctions with existing pavements

Pavement base: Protect using a suitable temporary seal or primerseal.

Primed surface: Keep traffic off the primed surface for at least 3 days after spraying. Commence sanding 4 – 24 hours after spraying.

...3.10 COMPLETION

Traffic on pavement

Notice: Give notice before opening the pavement to traffic before the work is completed. Provide adequate means of protection.