Interim Pavement Design and Construction Guidelines

CITY OF SYDNEY
September 1998

To be read in conjunction with Central Sydney Paving Design Policy, 1996
## List of Drawings

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## Specification Notes

- **Note 1**: New Tree Planting in Paving (2 sheets)
- **Note 2**: Existing Tree Planting in Paving (1 sheet)
- **Note 3**: Reinstatement of Asphalt Paving
NEW TREE PLANTING (WHERE
AWNING LINE SETBACK PERMITS)
900 WIDE STONES EACH
SIDE OF TREE PIT
ALIGN SIGNS ON
PAVING JOINTS
EXISTING AWNING LINE
CONTROL JOINTS AT 10 COURSE
(MAX.) INTERVALS

Plan 1:100

CLOSURE UNITS AGAINST
BUILDING/PROPERTY LINE
VARY IN LENGTH AS
DETERMINED BY PATTERN.
MINIMUM UNIT LENGTH 300mm.

STONE SIZES: TYPE A 900X450
TYPE B 600X450
TYPE C 450X450
TYPE D 300X450

Typical Paving Module 1:50

TYPE 2 PAVING GENERAL ARRANGEMENT
DETAIL No. 1
Plan 1:100
FOR 5m RADIUS CORNER

Plan 1:100
FOR 2.5m RADIUS CORNER
(3m RADIUS CORNER SIMILAR)

TYPE 2 PAVING GENERAL ARRANGEMENT - CORNER WITH ORIGINAL KERB ALIGNMENT
DETAIL No. 2
SET OUT TO BACK OF KERB RETURN IN MULTIPLES OF 450mm (EQUAL TO PAVING COURSE WIDTH)

FLAGSTONE PAVING RETURNS AROUND CORNER TO KERB RETURN - TYPICAL

TSSR

T.P. & PAVING SETOUT

ALIGN KERB RAMPS TO SUIT LINES OF PEDESTRIAN TRAVEL AND PEDESTRIAN CROSSINGS

LINE MARKING

GENERAL ARRANGEMENT - CORNER - WITH PATH WIDENING

DETAIL No.3
Section 1:10
Existing Stone (Trachyte) Kerb & New Concrete Gutter

TYPICAL KERB AND GUTTER
DETAIL No. 4
Plan View 1:50

Isometric View 1:20

End Transition Stone
Section 1:20

NOTE: GENERALLY TRACITE TO MATCH EXISTING.
FOR USE TO ALLOW EMERGENCY VEHICLE ACCESS (eg. STREET CLOSURES)
OR SERVICE VEHICLE ACCESS ACROSS A FOOTPATH. FOR USE WHERE A VEHICLE
CROSSOVER (FOR REGULAR TRAFFIC) IS NOT APPROPRIATE. TYPICALLY USED
ON PATHS LESS THAN 3 METRES WIDE.

TYPICAL LAYBACK KERB
DETAIL No. 5
DETAIL No. 6 - NOT USED
SKETCH VIEW - TYPICAL PEDESTRIAN CROSSING - 150 KERB - FLUSH INVERT
DETAIL No. 7
RAMP WIDTH MAY VARY BY INCREMENTS OF 450mm (PAVING COURSE WIDTH). MINIMUM RAMP WIDTH 1350mm.

RTA PIT WITH 450 X 450MM STONE COVER (TYPICAL)

EXISTING AWNING LINE ABOVE

RAMP MARKERS 75mm DIAM - CONTRASTING COLOUR GRANITE (minimum 30% tonal variation required). TO BE CONFIRMED BY COUNCIL

KERB & GUTTER TRANSITION ZONE 500mm WIDE. STOP CHAMFER ON TAPERING KERB 100mm FROM INVERT. GUTTER INVERT RISES 25mm AGAINST KERB FACE TO MEET RAMP INVERT

RISE 30mm

RISE 25mm

RISE 5mm

CONCRETE GUTTER STONE KERB

Plan 1:50

STONE KERB CUT TO RAMP ANGLE 10mm SEALANT JOINT

TOP OF FOOTPATH BEYOND

REINFORCED CONCRETE SLAB 100mm THICK 75mm DIAM X 10 THICK RAMP MARKERS EPOXY FIXED TO PAVERS

LINE OF GUTTER INVERT BEYOND RAMP CROSSING 5 mm RISE

REINFORCED CONCRETE GUTTER & KERB BASE 3:1 SANDCEMENT BEDDING

Section 1:10

150 KERB PEDESTRIAN CROSSING - WITH FLUSH INVERT

DETAIL No. 8
NOTE: CROSSING WIDTH MAY INCREASE BY INCREMENTS OF 450mm (PAVING COURSE WIDTH)

EXTENT OF 60mm THICK PAVING BY LENGTH OF DRIVEWAY

RAMP MARKERS 75mm DIAM. - CONTRASTING COLOUR GRANITE (minimum 30% tonal variation required). TO BE CONFIRMED BY COUNCIL

KERB STONE

FACE OF KERB

STONE GUTTER

CONCRETE GUTTER

50mm STEP UP

Plan 1:50

STONE KERB CUT TO RAMP ANGLE

10mm SEALANT JOINT

60mm THICK PAPER

TOP OF FOOTPATH BEYOND

15x15 CHAMFER

30mm FALL

REINFORCED CONCRETE SLAB 100mm THICK

75mm DIAM. X 10 THICK RAMP MARKERS EPOXY FIXED TO PAVERS

REINFORCED CONCRETE GUTTER & KERB BASE

3:1 SANDCEMENT BEDDING

Section 1:10

150 KERB VEHICLE CROSSING - 2700 WIDE (minimum)

DETAIL No. 9
CONCRETE GUTTER
STONE RAMP AND KERB
RAMP MARKERS 75mm DIAM - CONTRASTING COLOUR GRANITE (minimum 30% total variation required). TO BE CONFIRMED BY COUNCIL.

RISE 25mm
100
900
900
900

RISE 25mm
100
200-300
450

RISE 5mm
500
300

TANGENT POINT OF KERB LINE

KERB & GUTTER TRANSITION ZONE 900mm WIDE. STOP CHAMFER ON TAPERING KERB 100mm FROM INVERT. GUTTER INVERT RISES 25mm AGAINST KERB FACE TO MEET RAMP INVERT.

Plan - 150 Kerb 1:50

TYPICAL KERB PEDESTRIAN CROSSING ON CURVE - WITH FLUSH INVERT
DETAIL No. 10
Option 1 - (Preferred)

Option 2

Option 3

Typical plans 1:100

TYPICAL KERB PEDESTRIAN CROSSINGS ON CURVES - OPTIONAL SETOUTS
DETAIL No. 11
Plan 1:100

- Existing building line
- Horizontal air cell to link channel and tree pit
- 2000 wide x 500 deep link channel
- Flagstone paving in random pattern
- 4000x2000 tree pit
- Stone kerb
- Concrete gutter
- 500 wide vertical air cell to sides of tree pit
- 900x1350 planter opening
- 900x450 'keystones' adjoining tree pit

Section A 1:50

- Flagstone paving on R.C. slab
- Granite setts on sand over geofabric
- 2000 wide x 500 deep link channel between tree pits
- Compacted soil mix
- Max 4000x2000x1000 deep excavation for tree planting
- Fortecon layer between slab and soil mix, or slab and air cell
- Irrigation manifold
- Air cell layer

Section B 1:50
(Through Link Channel)

- Line of property boundary
- Flagstone paving on R.C. slab
- Compacted soil mix
- Fortecon layer between slab and soil mix or between slab and air cell layer
- Concrete gutter & kerb base
- Stone kerb
- Flagstone paving
- 900 wide air cell to link channel

Note: Link channel only required for avenue plantings, where trees are spaced at 12 metre intervals or less.

Typical tree planting - Type 2 paving areas - General arrangement
Detail No.12
NOTE 1  NEW TREE PLANTING IN PAVING -(Applies to all paving types)

Excavation For Tree Pits
Excavate tree planting pits and link channels to the required depths. Remove all excavated material from site. Do not disturb services, excavate by hand around services.

Excavation depths:
Tree pits: 1000mm from underside of concrete base slab
Link channels: 500mm from underside of concrete base slab

Subgrade Preparation
Confirm that excavated tree pit is free draining, if not install sub-soil drainage lines and connect to available stormwater system.

Test sub-grade soils for suitability to support plant growth, incorporate any additives that may be required. Manually cultivate subgrade to base of tree pit and link channel excavations to a depth of 150mm. During cultivation, thoroughly mix in any materials required to be incorporated into the subsoil.

Structural soil mix
Structural soil mix shall be a thoroughly combined mix of 5 parts aggregate to 1 part filler soil as described below.

Filler Soil shall be a thoroughly combined mix of 1 part sandy loam to 1 part dolerite and 5% by volume of composted green waste, screened to less than 12mm, with the following properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Matter</td>
<td>&lt; 1% by weight</td>
</tr>
<tr>
<td>pH in water</td>
<td>5.5 - 6.5</td>
</tr>
<tr>
<td>Electrical Conductivity</td>
<td>&lt;1.2 dS/m</td>
</tr>
<tr>
<td>Ammonium</td>
<td>20-200mg/kg</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>10-50mg/kg</td>
</tr>
</tbody>
</table>

Additives
To the above filler soil components, the following additions are required (to be confirmed during testing of samples for approval):

- Magriline or a 50/50 Lime/Dolomite mix to bring pH to 5.5 - 6.5
- Trace Element Mix 100g/ cubic metre
- Potassium Nitrate 300g/ cubic metre
- Nitram (ammonium nitrate) 300g/ cubic metre
- Superphosphate 300g/ cubic metre
- Iron Sulphate 500g/ cubic metre
- Controlled Release Fertiliser 1.5kg/ cubic metre
- Gypsum 300g/ cubic metre
- Magnesium Sulphate (Epsom Salts) 150g/ cubic metre

These additives must be mixed with the filler soil and tested for compliance prior to blending with the crushed aggregate.

Aggregate shall be 40mm crushed Nepean River gravel or crushed basalt. Gravel shall be clean and free from clay and other matter. The aggregate shall be of the following particle size distribution:

<table>
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<th>A.S Sieve</th>
<th>Percent Passing</th>
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<tbody>
<tr>
<td>53.0</td>
<td>100</td>
</tr>
<tr>
<td>37.5</td>
<td>90-100</td>
</tr>
<tr>
<td>26.5</td>
<td>0-75</td>
</tr>
<tr>
<td>19.0</td>
<td>&lt;15</td>
</tr>
<tr>
<td>13.2</td>
<td>&lt;2</td>
</tr>
<tr>
<td>9.5</td>
<td>&lt;2</td>
</tr>
<tr>
<td>6.7</td>
<td>&lt;2</td>
</tr>
<tr>
<td>4.75</td>
<td>&lt;2</td>
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</tbody>
</table>

19 January 1999
Transporting
Soil mixes must be delivered to site pre-blended. The soil mix must be transported in a moist condition to prevent segregation of components.

Contamination
Where diesel oil, cement or other phytotoxic material has been spilt on the subsoil or soil mix, excavate the contaminated material, dispose of it off the site, and replace it with new soil mix, as directed, to restore design levels.

Placing Soil Mix
Backfill and compact soil mix in tree pits and link channels between tree pits in layers 150mm maximum thickness. The soil mix components must remain in a thoroughly blended composition and be kept moist during backfilling and compaction to prevent segregation of soil mix components. Watering in of the mix is not permitted. If any segregation of the aggregate and filler soil occurs, excavate the segregated material and re-mix the material to an even and uniform consistency prior to continuing with backfilling and compaction.

Compaction of Soil Mix
Thoroughly and evenly consolidate each layer to achieve a uniform density of not less than 95% maximum dry density as determined by AS 1289.5.1.1.at design levels.

Air Cell Panels
Air cell panels for sides of tree pits and underside of concrete paving slabs over tree pits and link channels shall be assembled from a 300mm x 300 mm x 40mm thick polypropylene cellular drainage tile fully wrapped in a non-woven needle punched geotextile fabric equivalent to the 'Atlantis' product code No. 10001 or Approved equivalent

Separation Layer
Install a single layer of polymeric film underlay, 200microns thick (Fortecron) over all horizontal air cell panel and soil mix surfaces prior to installation of concrete paving slabs, to prevent contamination of placed soil mix. Lap joints at least 200mm and seal with waterproof adhesive tape.

Watering Points / Irrigation
Install tree irrigation manifolds at each tree planting point. Construct manifolds from 90mm diameter rigid slotted UPVC fitted with filter sock and set in a true horizontal position to enable an even distribution of water around the tree root zone. Fit upturns at nominated locations and connect to pavement inspection/ inlet grates. The grates shall be a 150 mm x 150mm hinged grate in nickel bronze finish equal to 'SPS Squareflo series 150' with 'no-hub' coupling for connection to slotted UPVC pipe. Finish grates flush with adjoining pavement levels.

Where possible install automatic irrigation system using Approved flood bubbler outlets located within inlet grate. Irrigation systems and components subject to Council approval.
150 SQ. GRATE EQUAL TO 'SPS SQUARE FLO SERIES' WITH HINGED LID (24c) OVER WATERING PIPE.

TREE PIT DIMENSIONS VARY DEPENDING ON SIZE OF EXISTING TREE. MINIMUM DIMENSIONS 1350X1350

MINIMUM OF 3 ROWS OF SETTS ON ANY EDGE

MIN 150mm CLEARANCE FROM TRUNK - DECOMPOSED GRANITE INFILL

ASPHALT PAVING

EXISTING KERB

REFER TO ENLARGEMENT

85X85X85 THICK SETTS OVER 25mm SAND BED. PACK JOINTS WITH DECOMPOSED GRANITE.

1:10

Typical Plan 1:20

DECOMPOSED GRANITE INFILL

STAINLESS STEEL EDGE

ASPHALT PAVING ON R.C. SLAB

FORTECOM SEPARATION LAYER

WHERE POSSIBLE HAND EXCAVATE AROUND EXISTING ROOT ZONE TO REMOVE EXISTING ROAD BASE MATERIAL. BACKFILL ROOT ZONE WITH STRUCTURAL SOIL MIX TO COUNCILS SATISFACTION. NOMINAL DEPTH OF EXCAVATION 200 - 300mm.

EXTG TREE

SETTS ON 25mm SAND BED INSTALL EDGE UNITS ON CONTINUOUS MORTAR BEDDING

ASPHALT PAVING ON R.C. SLAB

90mm DIAM. X900mm LONG SLOTTED UPVC WATERING PIPE WITH 75mm COVER CRUSHED 20mm DRAINAGE AGGREGATE.

Section 1:20

EXISTING TREES IN TYPE 3 AND 4 PAVING AREAS

DETAIL No. 15
Section 1:5
Junction with building

50mm THICK STONE PAVING ON 30mm THICK MORTAR BED

STAINLESS STEEL ANGLE 75x75x6
3mm JOURT Filled WITH BLUESTONE DUST
EXISTING ASPHALT
SAWCUT
MIN. 300
ASPHALT PAVING INFILL

Section 1:5
Junction with existing paving

TYPICAL PAVING JUNCTIONS
DETAIL No. 16
Plan 1:20

Section 1:10

TYPICAL ONE PART TELSTRA PIT COVER (TWO PART COVER SIMILAR)
DETAIL No. 17
NOTE: WHERE POSSIBLE REALIGN EXISTING PIT COVER TO MATCH NEW PAVING PATTERN. MAXIMUM REALIGNMENT TO BE 5 DEG. OBTAIN APPROVAL FROM AUTHORITY FOR COVER REALIGNMENT.

NEW METAL PIT COVER AND FRAME WITH PAVING INFILL. NUMBER OF LID PANELS VARIES.

KEYHOLES WITH STAINLESS STEEL EXTENSION PIECES.

STAINLESS STEEL EXTENSION PIECES TO EDGES OF LID AND FRAME TO ALIGN WITH TOP OF ADJACENT PAVERS.

BEAM BELOW

CUT PAVERS TO FIT INTO METAL PIT LID TO CONTINUE PATTERN OF SURROUNDING PAVING. LOCATION OF PIT COVER IN RELATION TO PAVING PATTERN VARIES

Plan 1:20

STAINLESS STEEL EXTENSION STRIPS TO EDGE OF LID AND FRAME (38MM PROJECTION HEIGHT)

PAVING ON MORTAR BED AS INFILL TO PIT COVER

FORM SETDOWN IN CONCRETE SLAB FOR FRAME OF PIT COVER. BEG PIT COVER IN MORTAR

EXISTING SERVICES PIT

IF REQUIRED EXTEND WALLS WITH NEW CONCRETE TO ENG. DETAILS TO RAISE TOP OF PIT TO SUIT NEW PAVING LEVEL

Section 1:5

TYPICAL MULTI PART COVER
DETAIL No. 18
NOTE 2 EXISTING TREE PLANTING IN PAVING -(Applies to paving types 3 & 4)

Ground Preparation
Carefully excavate by hand existing site fill and base course material away from the root zone of the existing trees to a maximum depth of 300mm or as much as site conditions allow. Do not disturb or sever any root material. Excavation work around these trees shall be undertaken in the presence of a qualified horticulturalist or arboriculturist. Remove all excavated material from the site.

Only commence excavation work around existing trees when backfilling of structural soil mix can commence immediately on completion. Where tree roots are exposed in an excavation cover with hessian and keep permanently moist by regular application of water. Tree roots must not be allowed to dry out.

Structural soil mix
Refer to "New Tree Planting in Paving" for structural soil mix composition, delivery to site, placement and compaction.

Air Cell Panels
Install air cell panels over placed structural soil mix to underside of concrete paving slabs over. Air cell panels shall be assembled from a 300mm x 300mm x 40mm thick polypropylene cellular drainage tile fully wrapped in a non-woven needle punched geotextile fabric equivalent to the 'Atlantis' product code No. 10001 or Approved equivalent.

Separation Layer
Install a single layer of polymeric film underlay, 200microns thick (Fortecron) over all horizontal air cell panel and soil mix surfaces prior to installation of concrete paving slabs, to prevent contamination of placed soil mix. Lap joints at least 200mm and seal with waterproof adhesive tape.

Watering Points / Irrigation
Install tree watering points at each tree location. Pipe shall be 90mm diameter rigid slotted UPVC fitted with filter sock. Connect to pavement inspection/inlet grates. Inlet grates shall be a 150mm x 150mm hinged grate in nickel bronze finish equal to 'SPS Squarefit series 150' with 'no-hub' coupling for connection to slotted UPVC pipe. Finish grates flush with adjoining pavement levels.
NOTE 3  REINSTATEMENT OF ASPHALT PAVING

Generally
This note relates only to reinstatement of asphalt paving associated with new installations of street furniture and tree planting.

Extent of Reinstatement
Reinstatement of asphalt paving shall occur in module lengths of 4metres for the full width and depth of the existing pavement and must extend beyond the ends of any street furniture element a minimum distance of 1.0 metre. For example, a 2metre long seat will require reinstatement of 1 module width, centred about the seat extending 1 metre beyond the ends of the seat. The table below indicates reinstatement requirements for various elements.

<table>
<thead>
<tr>
<th>Element</th>
<th>No. of 4metre Reinstatement Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seat (2000mm long)</td>
<td>1 module</td>
</tr>
<tr>
<td>Litter Bin</td>
<td>1 module</td>
</tr>
<tr>
<td>Freestanding Payphone &amp; Emergency Video</td>
<td>1 module</td>
</tr>
<tr>
<td>Automatic Public Toilet</td>
<td>To be confirmed by Council</td>
</tr>
<tr>
<td>Large Kiosk</td>
<td>To be confirmed by Council</td>
</tr>
<tr>
<td>Small Kiosk</td>
<td>To be confirmed by Council</td>
</tr>
<tr>
<td>Bus shelter (Cox 4)</td>
<td>2 modules</td>
</tr>
<tr>
<td>Bus shelter (Cox 5)</td>
<td>2 modules</td>
</tr>
<tr>
<td>Bus shelter (Cox 8)</td>
<td>3 modules</td>
</tr>
<tr>
<td>Service Pit Covers (up to 2m long)</td>
<td>1 module</td>
</tr>
<tr>
<td>Service Pit Covers (over 2m long)</td>
<td>2 modules</td>
</tr>
<tr>
<td>New Tree Planting (with 4m x 2m tree pit)</td>
<td>2 modules</td>
</tr>
</tbody>
</table>

Reinstatement Sequence
Where possible complete reinstatement of asphalt paving for all street furniture elements following installation of concrete footings and any support posts prior to attaching other above ground components.

Installation
Install asphalt paving in accordance with Council’s relevant specifications and AS2734 - 1984 Asphalt (Hot Mixed) Paving - Guide to Good Practice.

Provide neat and accurate sawcut edge between existing and new asphalt paving. The sawcut must be at right angles to the kerb and absolutely straight.
TYPICAL TREE PLANTING - TYPE 3 AND 4 PAVING AREAS

SECTION 1:20

NOTE: GENERAL ARRANGEMENT AND DIMENSIONS OF TREE PIT AND LINK CHANNEL AS FOR TYPE Z PAVING AREAS.