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**WORKS IN
ROAD RESERVES**

**Road Openings and
Reinstatement Guidelines**

for Utilities

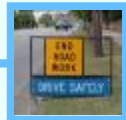
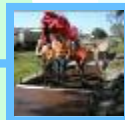
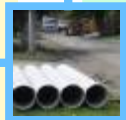
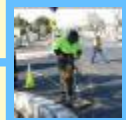


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1. SCOPE

This document covers requirements for the excavation and reinstatement of openings in, on under or over road reserves associated with the installation, inspection, maintenance or replacement of utility services by Utilities within the City of Kingston.

2. DEFINITIONS

Road Reserve	means all of the area of land that is within the boundaries of a road.
Utility	means an entity (whether publicly or privately owned) which provides, or intends to provide, water, sewerage, drainage, gas, electricity, telephone, telecommunication or other like services under the authority of an Act of Victoria or the Commonwealth;
Works	includes any kind of activity conducted on or in the vicinity of a road in connection with the construction, maintenance or repair of the road or the installation, maintenance or repair of any infrastructure in, on, under or over a road, including: <ul style="list-style-type: none">• Excavation or breaking up the surface of a road;• Erecting a structure in, on or over a road;• Removing or interfering with any structure or marking on a road;• Planting or removing a tree or other vegetation;• Tunnelling under a road;• Connecting a road to a road;• Installing pipes, drains, cables, poles, buildings, shelters or other structures on a road reserve;• Erecting any obstruction on a road or otherwise impeding the use of a road a road,
Works Manager	means any person or body that is responsible for the conduct of works in, on, under or over a road. Note: This includes all works whether related to road infrastructure or non-road infrastructure.

3. WORKS WITHIN THE ROAD RESERVE

Before undertaking any work in the Road Reserve of a Municipal Road in the City of Kingston you must obtain consent from the Kingston City Council unless you are exempt under the Road Management (Works and Infrastructure) Regulations 2005.

A summary of the requirements which must be followed when working in a road reserve can be found in “A Guide to Working in the Road Reserve” (joint publication by Municipal

Association of Victoria, Victorian Water Industry Association, EnergySafe Victoria, VicRoads).

4. PRESERVING THE INTEGRITY OF INFRASTRUCTURE

Unless specifically approved, use methods which do not involve excavating or breaking up road pavements, pathways, vehicle crossings or kerb & channel.

5. WORKS OUTSIDE CARRIAGEWAYS

Underground services outside carriageways shall be parallel or at right angles to the carriageway.

The cover shall be not less than:

- 450 mm from the top of the pipe or carrier-conduit to the surface; or
- the minimum cover required by the relevant utility,

whichever is greater.

Paved areas (including vehicle crossings) shall be bored under.

Aerial services shall have a minimum height clearance of 5.5 m above the natural surface and a minimum lateral clearance of 3 m from the edge of carriageway in urban areas and 9 m in rural areas, except where frangible poles are used.

6. CROSSING OF CARRIAGEWAYS

Unless otherwise approved, crossings of carriageways shall be made square or near square to the road centreline and shall be made by **boring** from openings made outside the carriageway.

Unless otherwise approved, where pipelines or carrier-conduits greater than 75 mm diameter are placed under carriageways the cover shall be not less than:

- 900 mm from the top of the pipe or carrier-conduit to the pavement surface;
- 600 mm from the top of the pipe or carrier-conduit to the invert level of open drains;
- or
- the minimum cover required by the relevant utility,

whichever is greater.

7. BORING UNDER CARRIAGEWAYS

Detailed proposals for boring under carriageways or alternative underground methods proposed by the Works Manager shall be submitted to Council’s Utility Liaison Officer for review before commencing work.

It is preferable for services to be installed by thrust boring under the road. Roads should be opened only if thrust boring is not practicable and approval in writing has been received from Council’s Utility Liaison Officer.

Unless otherwise approved, boring by water jetting will not be permitted.

Unless otherwise approved, the annulus between the bore and the pipe or carrier-conduit shall be filled by pressure grouting.

8. TRENCHES IN EXCESS OF 1.5 METRES DEPTH

For trenches in excess of 1.5 metres depth, relevant notice must be given in accordance with the Occupational Health and Safety Act 2004.

9. LOCATION OF SERVICES

Before any excavation is commenced, a check shall be made with all utilities to establish the location of any services in the vicinity of the proposed excavation.

If the existing services are not clear of the works, their location, eg. depth, alignment, height, etc., must be accurately known.

Information on the location of underground assets for most authorities is available by contacting “Dial Before You Dig”:

- Free call 1100, or
- refer to the website, www.dialbeforeyoudig.com.au

10. SAFETY OF THE PUBLIC

The Works Manager shall erect signs to advise the public that entry to the works area is not permitted.

The Works Manager shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, danger signals and signs, and take all necessary precautions for the protection of the works and the safety of other contractors, organisations and the public.

Roads closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning and detour signs in accordance with Australian Standard AS 1742.3, Manual of Uniform Traffic Control Devices, Part 3 - Traffic Control Devices for Works on Roads.

All barricades and obstructions shall be illuminated from sunset until sunrise.

11. TRAFFIC MANAGEMENT

11.1 General

The Works Manager shall take reasonable measures to protect the safety of road users and their own workers and minimise disruption to residents, businesses and traffic.

Section 99A (3) of the Road Safety Act 1986 states that a person undertaking works on the road must have in operation a Traffic Management Plan. Guidance in preparing Traffic Management Plans can be found in the Code of Practice for Worksite Safety – Traffic Management. A copy of the Traffic Management Plan shall be retained at the work site at all times.

Unless otherwise approved, or in an emergency, no work shall be carried out on the road reserve outside daylight hours.

Provision must be made for traffic flow while the work is in progress.

Where traffic lanes must be closed to enable excavations to be made, the timing of the excavations and the associated traffic control shall be subject to the prior review of Council's Utility Liaison Officer.

A full road closure requires the approval of Council's Manager Infrastructure.

For road closures on Arterial Roads refer to VicRoads.

11.2 Traffic Control

Careful consideration has to be given to the signing of the work site, no matter how brief the occupation of the site may be. This shall include -

- (a) provision of adequate warnings of changes in the road surface and the presence of personnel or plant engaged in work on the road;
 - (b) adequate instruction of road users and their guidance safely through, around or past the work site;
 - (c) protection of workers.
- Signs and devices shall be used in accordance with Australian Standard AS 1742.3, *Manual of Uniform Traffic Control Devices, Part 3 - Traffic Control Devices for Works on Roads*.

- Signs and devices shall be erected and displayed before work commences at a work site.
- Signs and devices shall be regularly checked for effectiveness and they shall be maintained in satisfactory condition.
- Signs and devices shall be removed from a work site as soon as practicable. However, appropriate signs shall remain in place until all work (including any bituminous surfacing, removal of loose stones and linemarking) has been completed.

11.3 Traffic Management Through the Work Site

Issues that require close attention are:

- **Removal of Signs**
All signs must be removed or covered as soon as the need for them ceases to exist. For example, temporary signs such as “Road Plant Ahead” and “Workmen Ahead” shall be removed at night;
- The traffic lanes shall always be clearly delineated and left in a hard and trafficable condition;
- All signs and lights shall be regularly checked to ensure that they are clean and working;
- High visibility jackets **MUST** be worn by ALL personnel on the work site;
- When two lanes are not available, traffic controllers **MUST** be used to control traffic and provide assistance to the public; and
- Appropriate road works speed limits must be used.

11.4 Speed Limits

The necessary VicRoads approvals shall be obtained prior to erecting road work speed limits.

11.5 Detours Around Works

Detours should only be used as a last resort and where the construction will not permit vehicles to proceed through the site.

A full road closure requires the approval of Council’s Manager Infrastructure.

Where road closures are required, information and road closure signs shall be erected.

Information signs shall detail the extent of the closure, the expected timing with dates, and detour routes. These signs shall be in place 2 weeks before the closure is implemented.

The detour shall be signed in a logical sequence to ensure that motorists can easily find their way along the detour.

11.6 Minimising Traffic Disruption

Work shall be planned so as to minimise disruption to traffic. On heavily trafficked roads, the number of lanes closed shall not cause a significant build up of traffic.

Except in emergency situations, work during peak hours shall be avoided, particularly on more heavily trafficked roads.

11.7 Notification of Delays

Where works are likely to cause significant or repeated delays to traffic, the media shall be advised by a news release issued with the approval of Council's Utility Liaison Officer. It may be desirable to place an advertisement in local papers. Emergency services, affected bus companies, and any affected property owners shall be advised in writing. Signs shall be erected showing possible duration of the delays.

Variable message boards may need to be used on arterial and collector roads.

Where a project will be under construction for more than 7 days, a sign is to be displayed listing Contractor, Project Name, Date of Works, Contact Name and telephone number.

12. THE SITE

12.1 Access to the Site

The Works Manager shall give prior notification and make suitable arrangements with appropriate authorities and private land owners before commencing works on their property or storing pipes and equipment on their property or nature strips in front of their properties.

Upon completion of the Works, the Works Manager shall remove all areas of temporary hard standing and shall restore the Site to the satisfaction of Council's Utility Liaison Officer.

12.2 Use of the Site

The Works Manager shall give at least 48 hours notice in writing to affected property owners of proposed disruption to services or restrictions to property access. The notice shall include a summary of the proposed works, the contractor's name, dates and times that disruptions or restrictions will apply, a 24 hour contact name and telephone number.

Vehicular access to private property shall not be prevented when the Works Manager is not present on site (i.e. overnight access to be maintained).

The Works Manager shall confine its operations so as to minimise the impact on the area and shall cooperate with property owners to minimise inconvenience.

12.3 Condition of Existing Council Infrastructure

The Works Manager shall conduct an inspection before commencing works, to identify and record the details of any damaged road and other infrastructure within the limits of the proposed works. If there is pre-existing damage to any road and other infrastructure, the Works Manager shall advise Council's Utility Liaison Office before works commence if it is aware of such damage, or as soon as the damage becomes evident to the Works Manager. Road infrastructure includes road pavement, kerb and channel, drains, drainage pits, footpaths, vehicle crossings, nature strip trees, street furniture, roadside signs, etc.

The Works Manager will be required to fund repairs to pre-existing damage to road and other infrastructure if not reported to Council before commencing works.

12.4 Storage of Materials

Materials may be stacked on the footpath or roadway in Council approved locations. Materials shall be placed to avoid accidents or obstruction to footpaths, channels or roadways. The materials shall be barricaded, signed and lit in accordance with Australian Standard AS 1742.3, *Manual of Uniform Traffic Control Devices, Part 3 - Traffic Control Devices for Works on Roads*. Safe passage for pedestrians shall be provided at all times.

12.5 Control of Noise and Pollution

The operation of all plant and equipment shall be such that it does not cause undue noise, and that it minimises atmospheric pollution.

12.6 Preservation of Flora

The Works Manager shall not destroy, remove or clear trees and vegetation or disturb or remove the root system under the canopy of a tree, without the prior written authority of Council's Team Leader Parks Department.

Where removal of roots is approved, they shall be cleanly cut at the edge of the trench and not lifted or ripped out.

Care shall be taken to avoid touching of trunk and branches.

BORING REQUIREMENTS AT ALL TIMES – directional, under boring must be carried out to prevent tree damage at all times directly beneath the trunk of the tree from drip line to drip line.

All directional boring is to be carried out with the access trenches or pits being dug outside the PRZ (primary root zone is the area to the drip line or outer edges of the canopy or a circle the radius of the height of the tree whichever is greater) of all trees and the boring is to be at least 500 mm below the current ground surface. No trenching or digging is to occur within the PRZ of any trees for the purpose of installing pipelines or cabling.

All trees have a CRZ (critical root zone, means the area surrounding a trees trunk which contains the roots that are essential to the trees continued health, vigour and stability) and is regarded as a no dig zone. The CRZ can be defined as the area 10 times the diameter of the trunk.

Cutting, tearing, snapping and breaking of the roots is not accepted and is not in accordance with accepted arboricultural practices.

No tree roots greater than 50mm in diameter are to be cut and smaller size roots greater than 25mm in diameter that are required to be removed are to be cleanly cut using a sharp pruning saw.

Any further information on this matter contact Kingston's Parks Department on 1300 653 356.

12.7 Cleanliness of Site

The Works Manager shall at all times keep roads, footpaths and channels in a clean and tidy condition. Upon completion of the work all surplus materials shall be removed.

12.8 Control of Silt

All stockpiles of soil, sand or other loose erodible material shall be placed in locations away from drainage lines and channels unless adequately protected from erosion.

The Works Manager shall ensure that silt is not washed into Council's existing drainage system by stormwater runoff or the disposal of water from the site.

The Works Manager shall remove any material resulting from the works that has fallen into drainage pits or is blocking pipes, before leaving the site.

13. EXCAVATION

13.1 General

Where the open trench method of crossing is accepted, the line of the trench shall be straight and form the shortest link between terminals wherever practical. The width of trench shall be not greater than that necessary to carry out the work.

The length of trench open at any time shall be kept to a minimum.

All trenches located within a paved area shall be saw cut vertically to define the limit of excavation and provide a flush joint for reinstatement upon completion of the Works. Particular care shall be taken to ensure that the remaining paved area is not damaged during excavation.

If the excavated material is required for backfilling, it shall be safely and neatly stacked where it will not block or wash into drainage lines. Unsuitable or excess material shall be disposed of immediately.

Where utility services could be intersected by the excavation, the service shall be located using hand excavation.

Any drains or services disturbed as a result of the work shall be reported immediately to Council's Utility Liaison Officer and shall be reinstated promptly.

14. REINSTATEMENT

14.1 General

The Works Manager shall carry out temporary and permanent reinstatement works in a manner that is safe for workers and road users at all times.

Any disturbed area shall be restored with material of the same type and quality as the existing asset. The surfacing shall match the existing surface in colour and texture to the satisfaction of Council's Utility Liaison Officer.

All reinstated paved areas are to extend at least 150 mm each side of the extremities of the top of the excavated trench.

Paved areas shall be backfilled with selected backfill.

Unpaved areas shall be backfilled with ordinary backfill.

14.2 Bedding

Bedding complying with Table 14.2.1 is required and shall be placed below, around and above the pipe or carrier-conduit for the full width of the trench. Not less than 25 mm compacted depth of bedding shall be placed below, and not less than 150 mm compacted depth of bedding shall be placed above, the pipe or carrier-

conduit. Bedding shall be placed in layers not exceeding 150 mm loose thickness and shall be compacted as specified.

Table 14.2.1

Material	Sieve Size - AS (mm)					Plasticity Index	
	Percentage Passing (by mass)					min	max
	75.0	37.5	19.0	2.36	0.075		
Bedding	-	-	100	-	10-40	2	10

14.3 Backfill

Selected backfill shall be 20 mm, Class 3 crushed rock.

In paved areas, including road pavements, shoulders, footpaths, vehicle crossings, and kerb & channel openings shall be backfilled, to the underside of the paved area bedding or base course with Class 3 fine crushed rock, placed and compacted as specified in layers not exceeding 150 mm loose thickness.

Selected backfill located more than 500 mm below the finished surface of the road opening reinstatement can be substituted with the selected backfill material specified in Table 14.3.1, if the material is tested and proved to comply with this grading.

In unpaved areas, openings shall be backfilled with ordinary backfill complying with Table 14.3.1, placed and compacted as specified in layers not exceeding 200 mm loose thickness.

Table 14.3.1

Material	Sieve Size - AS (mm)					Plasticity Index	
	Percentage Passing (by mass)					min	max
	75.0	37.5	19.0	2.36	0.075		
Selected backfill	-	100	-	-	10-40	5	20
Ordinary backfill	100	-	-	40-100	-	-	-

14.4 Grassed Areas

Topsoil type	medium texture general purpose garden soil
Topsoil depth	match existing or 75 mm, whichever is greater.
Seed type	match existing grass type or perennial rye

Seed application rate	30 g/m ² , 3 kg/100m ²
Fertiliser type	N:P:K, 16:8:8
Fertiliser application rate	25 g/m ² , 2.5 kg/100m ²

All materials to be supplied by the Works Manager.

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Section 720.

14.5 Concrete Footpath

Minimum replacement:	Full bays
Minimum compressive strength @ 28 days:	32 MPa
Minimum depth:	Match existing or 75 mm, whichever is greater.
Bedding:	Size 20, Class 2 crushed rock, 50 mm depth

Refer to Council Standard Drawing No.: S301.

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Section 801.

14.6 Asphalt Footpath

Minimum replacement:	Full width
Asphalt type	Size 7, Type N
Minimum depth:	50 mm
Bedding:	Size 20, Class 3 crushed rock, 75 mm depth

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Sections 304, 407, 812.

14.7 Concrete Vehicle Crossing

Minimum width of replacement:	Full bay
Minimum bay width:	1300 mm
Minimum width of remaining bay:	1300 mm
Minimum compressive strength @ 28 days:	25 MPa
Minimum depth:	125 mm
Bedding:	Size 20, Class 2 crushed rock, 75 mm depth

Refer to Council Standard Drawing Nos.: S201, S202, S203.

14.8 Concrete Kerb & Channel

The kerb & channel profile shall match the profile of the existing kerb & channel.

Minimum replacement: Full bays
 Minimum compressive strength @ 28 days: 25 MPa
 Minimum depth: 100 mm
 Bedding: Size 20, Class 2, 3% cement stabilised, crushed rock, 75 mm depth

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Section 801.

14.9 Flexible Road Pavement

The proposed pavement profile to be used shall be discussed with and approved by Council's Utility Liaison Officer.

The minimum flexible road pavement profile shall consist of pavement material as specified in Table 14.9.1 and shall comply with the requirements of the specified sections as applicable.

Table 14.9.1

Pavement Layer	Material Type	Thickness (mm)	Density Ratio
1. Wearing Course	Size 10, Type N Asphalt	30	94.5%
2. Base Course Asphalt	Size 20, Type N Asphalt	70	96.0%
3. Base Course Rock	Size 20, Class 2 Crushed Rock	200	98% (Modified)

14.9.1 Asphalt Mix Selection

The proposed asphalt mix to be used shall be discussed with and approved by Council's Utility Liaison Officer.¹

Compacted layer depth shall be at least 2.5 times the nominal mix size, and for thin layers of 25 mm thickness or less, the compacted layer depth shall be about 3 times the maximum size.²

¹ Table 7.12, Guide for the Selection of Type of Hot Mix Asphalt for Various Traffic Ranges, from ARRB Group, SEALED LOCAL ROADS MANUAL - Guidelines to Good Practice: Construction, Maintenance & Rehabilitation of Pavements, July 2005, provides a useful reference.

² Table 7.13a, Guide to Selection of Size of Asphalt and Layer Thickness, from ARRB Group, SEALED LOCAL ROADS MANUAL - Guidelines to Good Practice: Construction, Maintenance & Rehabilitation of Pavements, July 2005, provides a useful reference.

14.9.2 Road Pavement Bases

Base course material shall meet the specification for Class 2 material and be of maximum nominal size of 20 mm. Class 2 material can be either crushed rock or plant mixed wet-mix crushed rock.^{3, 4}
Crushed rock shall be placed and compacted as specified in layers not exceeding 100 mm loose thickness.

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Sections 304, 407, 812.

14.10 Concrete Road Pavement

Minimum width of replacement:	900 mm
Minimum length of replacement:	900 mm
Minimum distance to joint:	1200 mm
Minimum distance reinstated concrete slab to extend beyond edge of trench:	300 mm
Minimum compressive strength @ 28 days:	32 MPa
Minimum Polished Stone Value	48
Minimum depth:	150 mm
Dowels:	Y16 bars @ 600 mm centres, 300 long, 150 into existing concrete
Bedding:	Size 20, Class 2 crushed rock, 75 mm depth
Texture requirements:	Refer to Table 14.10.1

Table 14.10.1

Operating Condition	Method of Texturing	Required Minimum Texture (mm)	
		Sand Patch	Root Mean Square
Low speed roads (≤ 70 km/h)	Brooming or hessian drag	0.20 to 0.45	0.25 to 0.35
High speed roads (> 70 km/h)	Transverse tyning using metal tyne and light hessian drag	0.40 to 0.70	0.33 to 0.37
Critical locations	Tyning as above	0.50+	0.40+

³ Quality standards with respect to grading, Plasticity Index and laboratory soaked CBR values for base and sub-base materials suitable for local residential street construction are given in Mulholland P.J. (1989), STRUCTURAL DESIGN GUIDE FOR FLEXIBLE RESIDENTIAL STREET PAVEMENTS, Australian Road Research Board Special Report No. 41.

⁴ Recommended grading limits for crushed rock are given in Table 8.2, SEALED LOCAL ROADS MANUAL - Guidelines to Good Practice: Construction, Maintenance & Rehabilitation of Pavements, July 2005.

Refer to VicRoads Standard Specification for Roads and Bridgeworks, Sections 703, 801.

14.11 Pavement Markings

Pavement markings removed as a result of the reinstatement activities will need to be restored.

The road markings shall be restored to the standard of the original markings and shall be applied to a clean surface. Dust and dirt are removed by sweeping, and oil is removed with mineral spirits or kerosene, followed by washing with a mild detergent solution.

Newly painted markings shall be protected with traffic cones until dry.

All linemarking and raised pavement markers are to be supplied and installed in accordance with VicRoads Standard Specification for Roads and Bridgeworks, Sections 710, 721, 722, and 853.

14.12 Special Surfaces

Where footpaths, vehicle crossings or road pavements are constructed using special materials, eg. bricks, bluestones, pattern pave concrete, quarry pavers, etc, reinstatement of these surfaces shall be carried out with the approval of the Council's Utility Liaison Officer.

14.13 Temporary Reinstatement

Where

- the Works Manager is not authorised to undertake final reinstatement after repairs are made; and
- the repairs are in a paved area (eg. road pavement, vehicle crossing, footpath, etc.),

temporary repairs shall be made using bituminous cold mix to a minimum depth of 50 mm within the period specified in Table 14.13.1.

Where

- the Works Manager is authorised to undertake final reinstatement after repairs are made;
- the repairs are in a paved area (eg. road pavement, vehicle crossing, footpath, etc.); and
- the period between completion of the repair and the final reinstatement will exceed the period specified in Table 14.13.1,

temporary repairs shall be made using bituminous cold mix to a minimum depth of 50 mm.

Table 14.13.1

Road Hierarchy	Works Manager authorised to undertake final reinstatement?	
	YES	NO
	Cold mix to be applied where time from repair to final reinstatement exceeds	Cold mix to be applied within
Local street	5 days	5 days
Collector road	48 hours	48 hours
Arterial road	same day	same day

If a temporary reinstatement is made to the road pavement, vehicle crossing or footpath, etc. then the excavation is to be backfilled and compacted in accordance with this specification.

14.14 Final Reinstatement

The final reinstatement shall be completed within 21 days of the temporary reinstatement.

15. TESTING AND INSPECTION OF CIVIL WORKS

15.1 General

The Works Manager is responsible for quality control tests and inspections of civil works.

The Works Manager’s quality control tests shall include:

- testing and inspection to ensure that all materials comply with the specified requirements
- compaction testing
- testing of concrete materials and concrete.

Testing shall be undertaken by National Association of Testing Authorities (NATA) approved laboratories.

15.2 Tolerances on Line, Level and Shape

15.2.1 Base Course Crushed Rock

The thickness of the base course shall be within 10 mm of the specified depth.

Bituminous surfacing shall be carried out as soon as possible after approval of the pavement to avoid loss of surface due to traffic, weather, etc.

15.2.2 Asphalt

The level of the top of each layer shall not differ from the specified level by more than 10 mm. Against kerb and channel the wearing course shall be flush with or not more than 5 mm above the lip of channel.

15.2.3 Concrete Road Pavement

The finished surface shall not deviate by more than 5 mm over a 3 metre length. Against kerb and channel the finished surface shall be flush with or not more than 5 mm above the lip of channel.

15.3 Compaction Testing

15.3.1 General

The Works Manager shall carry out compaction tests on the backfill and the reinstated road pavement.

Compaction testing of soils shall be carried out using the Standard Compaction Test in accordance with AS1289.5.1.1 - 2003, Methods of Testing Soils for Engineering Purposes, Determination of the Dry Density / Moisture Content Relation of a Soil Using Standard Compactive Effort.

Compaction testing of crushed rock shall be carried out using the Modified Compaction Test in accordance with AS1289.5.2.1 - 2003, Methods of Testing Soils for Engineering Purposes, Determination of the Dry Density / Moisture Content Relation of a Soil Using Modified Compactive Effort.

The Works Manager shall arrange for a copy of all test results to be forwarded to Council's Utility Liaison Officer within 2 days of the results being available.

In the event of any non-conformances to the requirements of the Works, the Works Manager shall immediately advise Council's Utility Liaison Officer the details of such non-conformance, including location in the Works, and the proposed remedial actions.

15.3.2 Bedding and Backfill (except pavement)

Unless otherwise specified, bedding and backfill shall have during compaction a uniform moisture content within the range 85% to 115% of the optimum moisture content. For backfill of nominal size greater than 40 mm the fraction of material passing the 37.5 mm sieve shall have during compaction a uniform moisture content within the range 85% to 115% of the optimum moisture content as determined for that fraction.

Bedding shall be compacted to refusal using hand held mechanical equipment.

Backfilling shall be assessed for compaction in lots as defined in Section 173 of VicRoads Standard Specification for Roadworks and Bridgeworks.

A lot will consist of a single layer, batch or area of like work which has been constructed or produced under essentially uniform conditions and is essentially homogeneous with respect to material and appearance. Unless otherwise specified, the extent of each lot shall not exceed one day's production. Discrete portions of a lot which are non-homogeneous with respect to material and appearance shall be excluded from the lot and shall be either treated as separate lots, or reworked. Where the areas excluded from a lot as non-homogeneous exceed 10% of the total lot area or at other specified percentages of the total lot area, the whole of the lot shall be rejected.

The number of tests per lot shall be three. A lot shall consist of a single layer of work. A minimum of 20% of all lots constructed shall be tested.

Backfill, the whole of which passes the 37.5 mm AS sieve, shall be compacted to a mean value of density ratio of not less than 97%. The calculation of density ratio shall be based on Standard compactive effort.

Where crushed rock is used as backfill it shall be placed in layers not exceeding 150 mm loose thickness compacted to a mean value of density ratio of not less than 95%. The calculation of density ratio shall be based on Modified compactive effort.

Detailed proposals for the compaction of backfill materials of nominal size greater than 40 mm shall be submitted to Council's Utility Liaison Officer for review before commencing work.

15.3.3 Pavement

Unless otherwise approved, pavement material shall have during compaction a uniform moisture content within the range 85% to 115% of the optimum moisture content as determined in the Modified compactive effort.

Pavement material shall be assessed for compaction in lots.

The number of tests per lot shall be three. All pavement layers shall be compacted to a mean value of density ratio not less than the percentage specified in Table 14.9.1. The calculation of density ratio shall be based on Modified compactive effort. All pavement layers shall be tested.

16. CLEANING OF SITE

Surplus excavated material shall be removed from the road reserve. Areas affected by the work shall be restored to a condition similar to that which existed prior to the commencement of the work.

All drains shall be left clean and ready for use.

17. MAINTENANCE

The reinstated surface shall be maintained by the Works Manager in a trafficable condition after the completion of backfilling. Additional pavement material shall be placed in the trench and compacted as specified where in paved areas settlement or loss of material from the surface exceeds 20 mm measured from a straight edge laid across the top of the trench.

18. COMPLETION OF PERMANENT REINSTATEMENT WORKS

At the completion of permanent reinstatement works, using the prescribed form, the Works Manager shall advise Council's Utility Liaison Officer when the road reserve has been restored as close as reasonably practical to its original condition.

19. DEFECTS LIABILITY PERIOD

The Works Manager shall be responsible for 12 months maintenance of their reinstatement works and any associated repairs to the road infrastructure needed as a consequence of poor performance of those reinstatement works. If maintenance or repair works are necessary before the end of the 12 month period, the Council and the Works Manager shall agree on the extent of those works before they are undertaken.

Should any settlement occur in the reinstated area, the Works Manager shall be responsible for meeting all costs associated with the rectification works, including tests to determine the cause of failure.

20. REFERENCES

Road Management Act 2004.

Road Safety Act 1986.

Road Management (Works and Infrastructure) Regulations 2005.

Road Management Act 2004, Code of Practice for Management of Road and Utility Infrastructure in Road Reserves.

Road Management Act 2004, Code of Practice for Worksite Safety – Traffic Management.

Municipal Association of Victoria, Victorian Water Industry Association, EnergySafe Victoria, VicRoads, A Guide to Working in the Road Reserve.

Municipal Association of Victoria, Victorian Water Industry Association, EnergySafe Victoria, VicRoads, Companion to “A Guide to Working in the Road Reserve”, August 2006.

ARRB Transport Research, Sealed Local Roads Manual - Guidelines to Good Practice: Construction, Maintenance & Rehabilitation of Pavements, July 2005.

Mulholland P.J. (1989), Structural Design Guide for Flexible Residential Street Pavements, Australian Road Research Board Special Report No. 41.

VicRoads, Standard Specification for Roadworks and Bridgeworks, current edition.