

SECTION 706 - INSTALLATION OR REPLACEMENT OF UTILITY INFRASTRUCTURE WITHIN ROAD RESERVES

~~##This section cross references Section 173.~~

~~If Section 173 is relevant, it should be included in the specification.~~

~~If Section 173 is not included in the specification, all references to it should be struck out, ensuring that the remaining text is still coherent.~~

706.01 DESCRIPTION

This section covers requirements for the installation or replacement of utility infrastructure (e.g. conduits, pipes, service pits, poles, aerial services/cables) within the existing and future road reserve ~~of an arterial road or freeway~~, as shown on the drawings, or as specified.

706.02 LEGISLATIVE FRAMEWORK

The management principles and practices applying to utilities and road authorities for the installation, maintenance, replacement and operation of utility infrastructure within road reserves are set out in the Road Management Act 2004, Road Management (Works and Infrastructure) Regulations 2005 and the Code of Practice for Management of Infrastructure in Road Reserves (Victoria Government Gazette No. S 269 Monday 6 October 2008).

All planning, design and installation or replacement of utility infrastructure, as shown on the drawings, or as specified, shall be carried out in accordance with the requirements set out in the above legislative framework and the additional requirements specified in this section.

Any consultation required with, and authorisation required from, other authorities under relevant utility regulations and codes shall be the responsibility of the Contractor.

706.03 POSITIONING, DEPTH AND HEIGHT CLEARANCE

All utility infrastructure within road reserves shall be clear of road carriageways and parallel or at right angles to the centreline of road carriageways unless otherwise agreed with ~~the Superintendent~~ Council.

Aerial services shall have a minimum height clearance of 5.5 m above the finished road surface level or the natural surface. Poles for aerial services shall have 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 or to the service authority requirements.

Unless otherwise shown on the drawings or specified, utility infrastructure and associated conduits installed under road carriageways ~~for freeways and arterial roads~~ shall be at depths to provide the following cover over the top of the infrastructure (including conduit):

- (a) 1200 mm minimum cover to the finished road surface level; and
- (b) 750 mm minimum cover to the invert level of road carriageway open drains.

706.04 BORING UNDER CARRIAGEWAYS

Unless otherwise specified or approved by ~~the Superintendent~~ Council, all utility infrastructure (including conduits) under road carriageways shall be installed by boring.

Detailed proposals for boring under carriageways or alternative underground methods proposed by the Contractor shall be submitted to ~~the Superintendent~~ Council for review two weeks prior to the programmed commencement of work.

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

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

706.05 EXCAVATION

Where the open trench method of crossing under a carriageway pavement is accepted, the line of the trench shall be straight, at right angles to the carriageway, 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 as approved by Council.

The edges of all trenches located within a road pavement shall be sawcut.

Any infrastructure located within the road reserve that is disturbed as a result of the work shall be reported immediately to the Superintendent Council and shall be reinstated promptly in consultation with the relevant infrastructure manager.

706.06 MATERIALS

Unless otherwise specified, materials used for bedding and backfilling shall be uniform in composition and free from perishable matter and shall comply with the requirements specified in Table 706.061.

Table 706.061 – Material Properties

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
Selected backfill	-	100	-	-	10-40	5	20
Common backfill	100	-	-	40-100	-	-	-

Pavement material shall be as specified in Clause 706.12 and shall comply with the requirements of the specified sections as applicable.

Table 706.061 Material Properties

<u>Material</u>	<u>Requirements</u>
<u>Bedding</u>	<u>20 mm nom size Class 3 crushed rock as specified in Section 812</u> <u>Or</u> <u>20 mm nominal size Class 3 crushed concrete as specified in Section 812</u>
<u>Selected Backfill</u>	<u>20 mm nom size Class 3 crushed rock as specified in Section 812</u> <u>Or</u> <u>20 mm nominal size Class 3 crushed concrete as specified in Section 812</u>
<u>Ordinary Backfill</u>	<u>Clay or fill from site free of vegetation and other deleterious matter. It shall not contain more than 20% rock. The rock shall not be larger than 75mm.</u>

Pavement material shall be as specified in Clause 706.12 and shall comply with the requirements of the specified sections as applicable.

706.07 BEDDING

Where specified in Clause 706.12 that bedding is required, bedding 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.

Bedding shall be no less than 50 mm compacted depth consisting of a minimum 20 mm nominal size Class 3 crushed rock or in accordance with the service authority requirements.

706.08 BACKFILLING

Unless otherwise specified or shown on the drawings, selected and common backfill shall be placed and compacted as follows under, around, and above the conduit after the sections are bedded:

(a) Conduits under Area to be Paved, including Shoulders and Verges

The embedment zone shall be backfilled in accordance with the service authority requirements and the trench fill zone backfilled to design subgrade level with selected backfill material as per Table 706.061 and above that level with the design and / or existing pavement material, in layers not exceeding 300 mm loose thickness. Where the trench has been excavated from the nominated or designed subgrade level or above, the trench shall be backfilled up to the nominated or designed subgrade level with selected backfill material placed and compacted in layers not exceeding 150 mm loose thickness, and above that level with common backfill material.

~~Where the trench is excavated from below the nominated or design subgrade level, the trench shall be filled with selected backfill material placed and compacted in layers not exceeding 150 mm loose thickness.~~

(b) Conduits within one metre of areas to be paved

The embedment zone shall be backfilled in accordance with the service authority requirements and the trench fill zone backfilled to design subgrade level or 150mm above the top of conduit whichever is greater with selected backfill material as per Table 706.061 and above that level with ordinary backfill, in layers not exceeding 200 mm loose thickness.

(c) Conduits under Area not to be Paved

~~The opening shall be backfilled with common backfill placed and compacted as specified in layers not exceeding 200 mm loose thickness.~~

The embedment zone shall be backfilled in accordance with the service authority requirements and the trench fill zone backfilled to 150mm above the top of conduit with selected backfill material as per Table 706.061 and above that level with ordinary backfill, in layers not exceeding 200 mm loose thickness.

(d) Conduits through Existing Paved Areas including Shoulders and Verges

Unless otherwise specified or shown on the drawings, the embedment zone shall be backfilled in accordance with the service authority requirements and the trench fill zone to the existing subgrade level backfilled with selected backfill material 20 mm nom size Class 2 crushed rock as specified in Section 812 placed and compacted in layers not exceeding 150 mm loose thickness and the pavement material placed and compacted in layers not exceeding 100 mm loose thickness using materials in accordance with clause 706.12.

706.09 COMPACTION STANDARDS

(a) 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 as determined in the Standard compactive effort. 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 in the Standard compactive effort.

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

Backfilling beneath or within one metre of areas to be paved shall be assessed for compaction in lots as defined in Section 173. The number of tests per lot shall be three. 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 98.7%.

The calculation of density ratio shall be based on Standard modified compactive effort. A lot shall consist of a single layer of work or as specified/required by the service authority. ~~A minimum of 20% of all lots constructed shall be tested.~~

~~Detailed proposals for the compaction of backfill materials of nominal size greater than 40 mm shall be submitted to the Superintendent for review before commencing work.~~

(b) Pavement

Unless otherwise specified, 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 as defined in Section 173. 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 98% ~~the percentage specified in Clause 706.12(b)~~. The calculation of density ratio shall be based on Modified compactive effort. All pavement layers shall be tested.

706.10 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.

706.11 MAINTENANCE OF PAVEMENT

The reinstated surface shall be maintained 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.

706.12 SCHEDULE OF DETAILS – REFER TO DRAWINGS

~~*** (a) Bedding (Clause 706.07) – ##(strikethrough 'Required' or 'Not Required'):~~Required / Not required

~~*** (b) Pavement Material (Clause 706.06)~~

Pavement Layer	Material Type	Thickness (mm)	Density Ratio (Modified)
1. ##:			
2.			
3.			
4.			
5.			