

NEW SOUTH WALES

SPECIFICATION

306U

**ROAD OPENINGS
AND
RESTORATIONS**

Amendment Record for this Specification Part

This Specification is the Utility Authority's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in amendment	Clause No.	Amendment Code	Author Initials	Amendment Date
<i>EXAMPLE 1</i>	<i>Provision for acceptance of nonconformance with deduction in Payment</i>	<i>XYZ.00</i>	<i>AP</i>	<i>KP</i>	<i>2/6/97</i>
1	Trenches not permitted in rigid pavements.	306U.014.	AM	AG	19/5/04
2	Council has no Tree Preservation Officer.	306U.094.	A	AG	19/5/04
3	80/20 Slag roadbase option.	306U.11(c) 1. (iii)	A	AG	19/5/04
4	Temporary base material incorporated into the final pavement.	306U.151.	A	AG	19/5/04
5	Thickness exception	306U.161.	A	AG	19/5/04
6	Thicknesses updated	Anne-xure 306UA 1.	AM	AG	19/5/04
7	Thicknesses updated	Anne-xure 306UA 2.	A	AG	19/5/04

SPECIFICATION 306U : ROAD OPENINGS AND RESTORATIONS

GENERAL

306U.01 SCOPE

1. The work to be executed under this Specification consists of the clearing, excavation, backfilling and restoration activities associated with the installation of public utility services within public road reserves or other reserves under the control of Local Government Authorities. This Specification is consistent with the objectives of the Streets Opening Conference Information Bulletin on Codes and Practices and the Model Agreement for Local Councils and Utility/Service Providers.

2. The Specification shall apply to Works under Contract where the Principal to the Contract is the relevant Utility Authority for the works under execution. The Utility Authority may be a Local Council, for Council initiated utility works.

3. This Specification excludes the installation activities of the relevant public utility service.

4. Installation of utility services by open trenching methods, in carriageway concrete pavements, full depth asphalt carriageways ~~or regional roads with more than 10,000 AADT,~~ shall not be permitted without the prior approval of the Superintendent *in consultation with Council's Restorations Officer*. Utility services under these carriageway pavements shall be installed in accordance with the Specification for TRENCHLESS CONDUIT INSTALLATION or the relevant Utility Authority's Specification as directed by the Superintendent. Maintenance of the Utility Authority's services may require the use of open trenching methods in these carriageway pavements. This work will only proceed with the Superintendent's approval. In this case restoration shall comply with Clause 306U.16 or the relevant Road Authorities' requirements.

Utility Services Under Concrete Road Pavements

5. The relevant Council may request removal and restoration to footpaths and/or carriageway pavements, adjacent to the Works, in addition to the removal and restoration requirements of the scope of this Specification. Such additional work shall be identified and defined by Council's Restoration Officer at the Set Out Inspection and Approval Hold Point of the Contract. In this case, payment for the additional removal and restoration activities shall be made as a Variation to the Contract at the agreed schedule of rates for the particular activities. Additional work shall not proceed without the prior approval of the Superintendent.

Additional Work

6. An Environment Management Plan containing erosion and sedimentation control measures, and noise and dust control measures, shall be implemented as required by the relevant Environmental legislation and in accordance with the requirements of the relevant Statutory Authorities. This action constitutes a **HOLD POINT**.

Environmental Control Measures

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7. All spoil and waste material shall become the property of the Contractor and shall be legally disposed of by the Contractor to either an appropriate recycling facility, disposal site or a legal waste management centre. The costs of disposal, including loading, haulage and any tipping fees, shall be borne by the Contractor.

Materials Disposal, Recycling

8. Requirements for quality control and testing are cited in Clause 306U.22.

Quality

306U.02 DEFINITIONS

For the purposes of this Specification the definition of terms used to define the components of the road reserve, quality activities and Contract participants shall be in accordance with the Australian Standards and definitions adopted as given below:

Standard

(The text in brackets is additional to the referenced definitions.)

The terms are:

(a) AS1348.1

Base (Base course)	One or more layers of material usually constituting the uppermost structural element of a pavement and on which the surfacing may be placed.
Carriageway	That portion of a road or bridge devoted particularly to the use of vehicles, inclusive of shoulders and auxiliary lanes (and inclusive of medians, traffic facilities and heavy duty driveways).
Clearing	The removal of vegetation or other obstacles at or above ground.
Footpath	The paved section of a pathway (or verge).
Pathway	A public way reserved for the movement of pedestrians and of manually propelled vehicles (AMCORD verge).
Pavement	That portion of a carriageway placed above the subgrade for the support of, and to form a running surface for, vehicular traffic (including the subbase and base course).
Shoulder	The portion of the carriageway beyond the traffic lanes and contiguous and flush with the surface of the pavement.
Subbase (Subbase course)	The material laid on the subgrade below the base either for the purpose of making up additional pavement thickness required over the subgrade, or to prevent intrusion of the subgrade into the base, or to provide a working surface on which the remainder of the pavement can be constructed. (The subbase course is often a different quality material to the base course.)
Subgrade	The trimmed or prepared portion of the formation on which the pavement is constructed. (Subgrade level is the level immediately below the pavement.)
Wearing Course (Surface)	The part of the pavement upon which the traffic travels.

(b) AMCORD

Verge	That part of the road reserve between the carriageway and the road reserve boundary.
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(c) AS/NZS ISO 8402

Hold Point	A defined position in the construction/manufacturing stages of the Contract beyond which work shall not proceed without mandatory verification and acceptance by the Superintendent, or other person approved by the Superintendent.
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Witness Point A nominated position in the manufacture/construction stages of the Contract where the option of attendance may be exercised by the Superintendent, after notification of the requirement.

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Quality Check Lists (Contractor's Checklist) Forms completed during the manufacture/construction process verifying key steps, and records required for the Quality Register. Check lists apply to each identified lot of work.

(d) AS4000

Contractor Means the person bound to carry out and complete work under the Contract. (A Contractor may be internal or external to the Utility Authority).

Principal Means the Principal stated in the Annexure to the General Conditions of Contract. (The Utility Authority or Service Provider for whom the service installation and restoration work is being conducted.)

Superintendent Means the person stated in the Annexure to the General Conditions of Contract as the Superintendent or other person from time to time appointed in writing by the Principal to be the Superintendent and notified as such in writing to the Contractor by the Principal and, so far as concerns the functions exercisable by a Superintendent's Representative, includes a Superintendent's Representative an individual appointed in writing by the Superintendent.

(e) Other

Council The Local Government Authority for the area where the work is being performed.

Roads Authority A person or body that is, by or under Roads Act 1993, declared to be a roads authority and in relation to a particular public road means the roads authority for that road (Road Act 1993).

Utility Authority Refer to Principal.

Ancillary Road Elements Means road elements including kerb and gutter, drainage pits, drainage lines, subsoil drainage lines, pavement markings, street furniture (ie signs, bins, road safety barriers, etc.)

Protected Species Plants identified by Council or other relevant authorities as protected species.

Carriageway Concrete Pavements Refers to reinforced concrete pavements. Does not include roller compacted concrete bases and subbases.

306U.03 REFERENCE DOCUMENTS

1. Documents referenced in this Specification are listed in full below whilst being cited in the text in the abbreviated form or code indicated. Unless noted otherwise, the most recent version of the Specification or Standard shall apply.

**Documents
Standards Test
Methods**

(a) Council Specifications

242	-	Flexible Pavements
243	-	Bituminous Cold Mix
244	-	Sprayed Bituminous Surfacing
245	-	Asphaltic Concrete
247	-	Mass Concrete Subbase
248	-	Plain or Reinforced Concrete Base
249	-	Steel Fibre Reinforced Concrete Base
250	-	Continuously Reinforced Concrete Base
254	-	Segmental Paving
261	-	Pavement Markings
273	-	Landscaping
305	-	Trenchless Conduit Installation

(b) Australian Standards

AS1289.5.1.1	-	Determination of the dry density/moisture content relation of a soil using standard compactive effort.
AS1289.5.2.1	-	Determination of the dry density/moisture content relation of a soil using modified compactive effort.
AS1289.5.6.1	-	Compaction control test – Density Index method for cohesionless material.
AS 1289.6.1.2	-	Determination of the California bearing ratio of a soil, Standard laboratory method for an undisturbed specimen.
AS 1348.1	-	Road and traffic engineering - Glossary of terms, Road design and construction.
AS1742.3	-	Manual of uniform traffic control devices Part 3: Traffic control devices for works on roads.
AS4000	-	General conditions of contract.
AS/NZS ISO 8402	-	Quality management and quality assurance – Vocabulary.

(c) Other

Street Openings Conference - Information Bulletin on Codes and Practices, 1997.
 The Utility Authorities' Specifications.
 The Model Agreement for Local Councils and Utility/Service Providers.
 Commonwealth Department of Housing and Regional Development – 1995:
 Australian Model Code for Residential Development. (AMCORD). A National
 Resource Document for Residential Development.

306U.04 PROVISION FOR TRAFFIC

1. The Contractor shall construct the Works in a safe manner with the least possible obstruction to traffic, both vehicular and pedestrian.

2. Two weeks before undertaking work which would involve any obstruction whatsoever to traffic, the Contractor shall prepare a Traffic Guidance Scheme, and submit it to the Superintendent for approval, this action constitutes a **HOLD POINT**. All activities for controlling traffic, both vehicular and pedestrian, shall be carried out in accordance with AS 1742.3, and the requirements of the relevant Statutory Authorities. In the case of emergency works a Traffic Guidance Scheme, pre-approved by the Superintendent at the commencement of the Contract, shall be implemented.

**Traffic
Guidance
Scheme**

HP

3. Safe, all weather vehicular and pedestrian access to properties shall be maintained wherever possible. Notice of 48 hours shall be provided to property owners whose access will be restricted. In the case of emergency works this notice shall be provided as soon as possible upon commencement of such works. The Contractor is required to consult with the affected property owners to minimise the impact of the Works on the property owners' operation including impacts of the Works and the Traffic

**Property
Access**

Guidance Scheme on businesses and around commercial areas.

4. On State Roads, Regional Roads, and in the proximity to certain traffic control devices as determined by the Superintendent, the Contractor shall obtain formal approval of the Traffic Guidance Scheme from the Roads and Traffic Authority, Council and Police.

**State and
Regional
Roads**

5. In the case of full road closures on local roads, the Contractor shall obtain prior approval of its Traffic Guidance Scheme from Council. In the case of emergency works a Traffic Guidance Scheme, pre-approved by the Superintendent at the commencement of the Contract, shall be implemented.

**Local Road
Closures**

CLEARING

306U.05 SET OUT

1. The Contractor shall set out the limits of the proposed excavation for trenches, pits and chambers required for the utility service installation. The set out shall minimise damage to existing surfaces. The set out shall be in chalk or crayon so as to be readily understandable by the Superintendent and will not permanently deface any surface.

Initial Limits

2. In order to minimise or eliminate residue small portions of paving slabs the set out shall be adjusted as necessary. Any adjustments will be with respect to the existing paved surfaces and joint patterns. Adjustments shall be in accordance with the following guidelines:

**Adjusted
Limits**

(a) Pathways

1. The set out line shall be varied in accordance with the reinstatement requirements of the Street Opening Conference's publication, Information Bulletin on Codes and Practices.

- (i) Bitumen and Concrete Paving - In accordance with the reinstatement provisions and sketches of the above Information Bulletin.
- (ii) Segmental Pavers - The set out line shall be at least one whole unit clear of both sides of the minimal alignment of the trench.
- (iii) Textured or Patterned Concrete – Where practicable trenchless installation methods should be used in preference to disturbing textured or patterned concrete. If trenchless installation methods are not practicable the set out line shall be located as approved by the Superintendent to enable an aesthetically acceptable restoration of the pavement.

2. Where the Superintendent directs that driveways are not to be disturbed, the utility services under driveways shall be installed in accordance with the Specification for TRENCHLESS CONDUIT INSTALLATION, or the Utility Authorities' Specification, as directed by the Superintendent.

Driveways

(b) Carriageways

1. In asphalt pavements, the proposed trench set out shall be at the minimum width to suit the appropriate restoration equipment, work methods for the depth of service and, wherever possible, shall be at right angles to the road reserve boundary. The requirements for the width of the final pavement restoration are given in Clause 306U.16. In concrete pavements the advice of the appropriate road authority/and or professional engineering advice should be sought regarding the location of trench set out lines, and trench set out lines shall be approved by the Superintendent, and appropriate Road Authority.

**Minimum
Width**

2. Any trench or surface work proposed in the vicinity of Permanent or State Survey Marks shall be referred to the Land Information Centre of the Department of Land and Water Conservation, prior to commencement of Work, to obtain protection or relocation requirements.

Survey Marks

(c) Inspection and Approval

1. The set out line shall be presented to the Superintendent for approval prior to the commencement of any surface clearing work. This action constitutes a **HOLD POINT**. The Contractor shall give notice to allow the Superintendent to inspect and approve the set out prior to the release of the hold point.

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306U.06 SURFACE TREATMENT REMOVAL

1. Trench set out lines located on concrete or asphalt footpaths, and asphalt carriageway pavements, shall be sawcut for the full depths of the bound pavement layers except where the set out line is located along expansion joints. Where a concrete subbase is found, upon removal of segmental pavers, it shall also be sawcut along the trench set out lines.

Sawcut

2. Concrete or asphalt footpath and carriageway pavement material shall be broken out, between the trench set out lines, removed and legally disposed of off-site by the Contractor in accordance with Clause 306U.01.

Concrete and Asphalt

3. Segmental pavers both full and cut, between the trench set out lines, shall be taken up by hand and neatly stacked on wooden pallets at locations as agreed by the Superintendent. Any dimension stone kerb and gutter units within the set out lines shall also be taken up and stacked in a similar manner.

Pavers and Dimension Stones

4. Pavement consisting of decorative pavers laid on a mortar bed and a concrete base shall not be disturbed unless Trenchless Conduit Installation is impractical. If it is necessary to disturb these surfaces, the decorative pavers shall be carefully removed, stacked and secured against theft, or damage in any form, for reuse. Sawcutting of decorative pavers shall not be permitted unless the Contractor can provide evidence that replacement pavers, of the same type, size, colour and decoration, are available. The bedding mix shall be removed and the concrete subbase shall be saw cut along the trench set out lines. If using percussion equipment for removal of the pavement, the Contractor shall ensure that adjacent areas of paving are not disturbed.

Decorative Pavers

5. Concrete edging, associated with the lifted segmental pavers, shall be broken out, removed and legally disposed of off-site by the Contractor unless agreed otherwise by the Superintendent.

Paver Edging

6. Grass turf, between trench set out lines, shall be neatly cut out and either stockpiled for reuse or legally disposed of off site by the Contractor. If grass is stockpiled for reuse it shall be watered as necessary. If grass is not suitable for reuse it shall be disposed of and replaced by grass turf of the same species.

Grass

7. Small plants, shrubs and trees, and or protected or heritage listed species, between the set out lines, identified by the Superintendent, and confirmed by Council's Tree Preservation Officer or appropriately authorised Council Officer, as being suitable for replanting shall be taken up and stored. The root ball of such plants, shrubs and trees shall be wrapped in a hessian or plastic bag with drain holes and shall be watered as necessary during the storage period.

Plants, Shrubs, Trees

8. Small plants, shrubs and trees, not being protected species or heritage listed species and not covered by Council tree preservation order, deemed unsuitable for replanting shall be removed and legally disposed of off-site by the Contractor.

Unsuitable Vegetation

9. Street furniture, including signage, seats, litter bins, etc, between the trench set out lines or likely to interfere with or be damaged by the Works, shall be removed and

Street Furniture

stored.

10. House stormwater pipes discharging into carriageway gutters, and house service supply lines, shall be maintained at all times. Any damage to these pipes, or house service supply lines, caused by the Contractor’s activities shall be repaired or replaced. The costs of such rectification works shall be borne by the Contractor.

House SW and Service Pipes Contractor’s Cost

EXCAVATION

306U.07 TOPSOIL

1. Before undertaking trench excavation, topsoil which is suitable for reuse in the restoration work, shall be removed and stockpiled on-site if practicable. If on-site stockpiling is impracticable, then the topsoil shall be either stockpiled off-site, or legally disposed of off-site, as directed by the Superintendent.

Suitable for Reuse

306U.08 TRENCH EXCAVATION

1. Trenches shall be excavated to the standard widths and depths for the particular utility service installation or to dimensions as shown on the Drawings.

2. In undertaking trench excavation, the Contractor shall provide any shoring, sheet piling or other stabilisation of the trench necessary to comply with statutory requirements.

Safety

3. Where other public utilities exist in the vicinity of the Works, the Contractor shall obtain the requirements of the relevant authority to the method of excavation before commencing excavation. The locations of existing underground services, stormwater and subsoil drainage lines, shall be established by exploratory excavation prior to the principal trench excavation. Details of the requirements of the relevant authorities, including Council, shall be provided to the Superintendent, if requested.

Requirements of Other Public Utility Authorities

4. The Contractor shall locate all existing underground services prior to excavations. This shall include contacting the relevant “Dial Before You Dig” service in the region where the Works are located.

Location of Services

5. Trench or foundation excavation shall be undertaken to the planned level for the bottom of the specified bedding or foundation level or such other depth as shown on the Drawings.

Excavation Level

WP

6. The excavated earth and rock material shall be segregated and stockpiled for reuse in backfilling operations. Excavated material shall not, at any time, be stockpiled against tree trunks, buildings, fences or obstruct the free flow of water in gutters, where stockpiling is permitted along the line of the trench excavation. Where on-site stockpiling is not practicable or the excavated material is deemed unsuitable for reuse in backfilling, the material shall be legally disposed of off-site.

Stockpiles

7. Any material at the bottom of the trench or at foundation level which is unsuitable, in accordance with the Utility Authorities’ Specification, shall be removed and legally disposed of off-site by the Contractor and replaced with backfill material in accordance with the requirements of this Specification. The bottom of the excavated trench or foundation, after any unsuitable material has been removed and replaced, shall be aligned at the specified level and slope of the utility service.

Unsuitable Material

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8. If any excavated material is contaminated or contains Hazardous Material, the Superintendent shall be notified and the material shall be disposed of in accordance with the requirements of the relevant Statutory Authorities.

Contaminated, Hazardous Material

306U.09 PROTECTION OF TREES

1. Existing trees are legally protected by Council’s Tree Preservation Order and shall be protected from all damage during the Works, unless otherwise approved by the Superintendent in consultation with the Council.

2. The Contractor shall not store, stockpile, dump or otherwise place under or near trees bulk materials and harmful materials including oil, waste concrete, clearings, boulders and the like and shall prevent wind blown materials from harming trees and plants.

Materials Clear of Trees

3. The Contractor shall not attach stays, guys and the like to trees and shall prevent damage to tree bark.

No Attachments

4. When working near trees the Contractor shall not remove topsoil from within the drip line of trees unless otherwise specified or directed. Where it is necessary to excavate within the drop line, approved methods such as hand methods or trenchless methods, such that root systems are preserved intact, shall be used. The duration of open excavations under tree canopies shall be determined by the Superintendent in consultation with Council’s Tree Preservation Officer or *Vegetation Management Co-ordinator*.

Work Near Trees

5. The Contractor shall not cut tree roots exceeding 50mm in diameter without the approval of the Superintendent in consultation with the Council’s Tree Preservation Officer or appropriately Authorised Council Officer. Where it is necessary to cut tree roots, a saw or similar means shall be used such that the cutting does not unduly disturb or rock the remaining root system. Immediately after cutting, an approved bituminous fungicidal sealant shall be applied to the cut to prevent the incursion of root disease.

Tree Roots

BACKFILL

306U.10 BEDDING ZONES

1. Bedding material for the bed, haunch, side and overlay zone shall be to the requirements, and shall be installed in accordance with the Specification for the particular utility service being installed.

Particular Service Specification

2. A geotextile sheet shall be installed on any coarse overlay material to prevent piping of fines.

Geotextile

3. The overlay zone is defined as that part of the trench backfill immediately over the utility service. The side zone and overlay material shall be installed in accordance with the Specification for the particular utility service being installed, provided that the material has the equivalent performance to the backfill material specified in Clauses 306U.11 and 306U.12 for that location. This action constitutes a **HOLD POINT**.

Overlay Zone

HP

306U.11 TRENCH BACKFILL

(a) General

1. Where sand/cement backfill is used, any natural seepage zones shall not be cut off by the impervious sand/cement material. Natural seepage shall be provided for by the provision of a pervious drainage layer or suitable subsoil drainage.

Seepage Zones

2. When sand, crushed rock or similar pervious materials are used for trench backfill and bedding in a clay subgrade, there is a risk that seepage water will be trapped in the pervious material and then saturate the adjacent clay subgrade, thus weakening it. If these circumstances occur, the Contractor shall install suitable subsoil drainage for the

Water in Pervious Material

bedding and backfill, or an impervious layer of material shall be provided between any possible sources of seepage and the pervious backfill material.

(b) Backfill in Verge and Landscape Areas

1. Backfill material shall be material passing 75mm sieve and not containing any organic or deleterious material or reactive clay. In landscape areas topsoil shall be placed on the subgrade to the same thickness as the surrounding topsoil.

Material

2. Backfilling, for a minimum 300mm thickness, around tree roots shall consist of topsoil mixture, placed and compacted in layers of 150mm depth to a dry density equal to that of the surrounding soil.

Tree Roots

3. The Contractor shall not place backfill material above the original ground surface around tree trunks or over the root zone unless approved by the Superintendent.

Backfill at Trees

4. Immediately after backfilling the tree root zone shall be thoroughly watered.

Watering Root Zone

(c) Backfill to Subgrade Level Under Footpaths and Carriageways (Including heavy duty driveways)

1. Any of the following materials shall be used:

Material

- (i) sand (shall not be used if the bedding/overlay is coarse aggregate);
- (ii) fine crushed rock/recycled concrete in accordance with the Specification for FLEXIBLE PAVEMENTS;
- (iii) *80/20 Slag Roadbase (80% blast furnace slag / 20% granulated blast furnace slag) conforming to RTA 3052 or selected backfill material with an equivalent 4 day soaked CBR value, in accordance with AS 1289.6.1.2, to the existing subgrade and a maximum particle size of 75mm and not containing any organic or deleterious material or reactive clay;*
- (iv) under footpath – 25:1 sand/cement mix (compaction testing is not required);
under carriageways – 14:1 sand/cement mix (compaction testing is not required).

306U.12 COMPACTION OF TRENCH BACKFILL

1. Backfilling shall be compacted to the following requirements when tested in accordance with AS 1289.5.2.1 for modified compactive effort (MMDD) or AS 1289.5.1.1 for standard compactive effort (MSDD). Non-cohesive materials shall be tested in accordance with AS 1289.5.6.1. No compaction testing is required where sand/cement is used as backfill material.

	Relative Compaction	Density Index (for Non-Cohesive Materials)	Moisture Content (percent of optimum moisture content)
Bedding and Overlay Zones	To Utility Authority's Specification	To Utility Authority's Specification	To Utility Authority's Specification
Backfill in verge and landscape areas	90% Standard	70	Between 60% and 100%
Backfill to subgrade level	98% standard	80	Between 60% and 100%

under footpaths and carriageways	95% modified		
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2. All material shall be compacted in layers not exceeding 150mm compacted thickness unless it can be demonstrated to the Superintendent's satisfaction by suitable testing that the specified compaction can be achieved with the thicker layers.

Layers

WP

3. Compaction tests shall be undertaken by the Contractor at the minimum frequencies shown in Annexure 306UC.

Testing

4. The Contractor shall adopt compaction methods which will not cause damage or misalignment to the underlying utility service, adjacent utility services or adjacent structures.

Precautions

RESTORATION

306U.13 GENERAL

1. Carriageway pavements and pathways shall be restored in a continuous manner to a condition equivalent to that existing at the commencement of the Works as agreed by the Superintendent. All temporary and final restorations in carriageways and pathways shall be of sufficient quality to ensure the safety of the site for pedestrian and vehicular traffic.

Equivalent Condition

2. Utility service surface pits, access chamber frames and lids, etc, shall be set such that carriageway pavements and footpaths can be restored to original levels. The Contractor shall liaise with other utility authorities should any other utility service surface box be required to be adjusted or replaced prior to restoration.

Surface Pits, etc

3. The Contractor shall set out the areas for paved restoration. This action constitutes a **HOLD POINT**. The Superintendent shall inspect and approve the prepared areas, and verify any additional restoration work required, prior to the release of the hold point.

HP

4. The requirements for trench backfill and restoration in footpaths and carriageway pavements are shown in tabular form in Annexure 306UA.

306U.14 TEMPORARY PAVEMENT

(a) Carriageways

1. After backfilling to subgrade level the subbase and base material shall be installed in accordance with Clause 306U.15 unless otherwise agreed by the Superintendent. Carriageway pavement shall be temporarily restored if it is to be re-opened to traffic prior to final restoration. The Contractor shall monitor and maintain temporary restorations in a safe condition until the final restoration is completed.

Re-open to Traffic

2. Temporary restoration shall consist of either:

(i) Bituminous cold mix, in accordance with the Specification for BITUMINOUS COLD MIX, 40-50mm thickness, on the final subbase and base material unless otherwise agreed by the Superintendent.

Flexible Pavement

(ii) Steel plating, over the trench, of sufficient thickness to support traffic loadings and suitably secured with pins and bituminous cold mix.

Steel Plating

3. Where steel plating is used, advance warning signs shall be provided in accordance with AS 1742.3.

(b) Footpaths, including Driveways

1. After backfilling to subgrade level the subbase material shall be installed in accordance with Clause 306U.17 unless otherwise agreed by the Superintendent. Footpaths, including driveways, shall be temporarily restored if they are to be re-opened for pedestrian or vehicular use, prior to final restoration. The Contractor shall liaise with property owners regarding access and ensure that pedestrian and vehicular access is provided to all properties at the end of each day's work unless otherwise approved by the Superintendent. The Contractor shall monitor and maintain temporary restorations in a safe condition until the final restoration is completed.

Re-open to Traffic

2. Temporary restoration shall consist of:

(i) Bituminous cold mix, in accordance with the Specification for BITUMINOUS COLD MIX, 20-40mm thickness, or other material approved by the Superintendent. A smooth connection shall be made with adjoining pavements such that the temporary restoration does not present a trip hazard for pedestrians. The surface of the temporary restoration shall be smooth and evenly graded so as to be safe for pedestrians.

Flexible Pavement

(ii) Sheet piling or steel plating, over the trench, of sufficient thickness to support traffic loadings and suitably secured with pins and bituminous cold mix. The Contractor shall ensure that steel plating does not cause a trip hazard for pedestrians by matching the level of the steel plating to the adjacent surface with bituminous cold mix.

Steel Plating

306U.15 FINAL RESTORATION OF CARRIAGEWAY SUBBASE AND BASE (FLEXIBLE)

1. Final restoration shall be undertaken as soon as practicable and within the time specified in the Contract. Prior to final carriageway pavement restoration, the temporary pavement material shall be removed and legally disposed of off-site by the Contractor. If approved by the Superintendent *in consultation with Council's Restoration Officer*, the temporary base material may remain in place and be incorporated into the final pavement where it complies with the requirements of this Specification for the base and subbase (including the compaction and testing requirements) and has not been disturbed or contaminated during removal of the temporary surface. The temporary asphaltic material shall be removed and disposed of off-site by the Contractor.

Remove Temporary Pavement

WP

2. If the temporary restoration shows signs of settlement, the final restoration shall not proceed until the cause of the settlement has been identified and rectified to the satisfaction of the Superintendent.

Settlement of Temporary Pavement

3. Subbase and base material shall consist of crushed rock or recycled concrete complying with the relevant requirements of the Specification for FLEXIBLE PAVEMENTS. The layers and depths shall match the existing pavement. Where the existing pavement includes cement stabilised crushed rock or a lean mix concrete subbase, the pavement shall be restored using materials and layer depths to match the existing pavement.

Material

4. Each layer of the subbase and base courses shall be uniformly compacted over the full area and depth within the trench to a relative compaction of 98 per cent when tested in accordance with AS 1289.5.2.1 (Maximum Modified Dry Density) or 102 per cent when tested in accordance with AS 1289.5.1.1 (Maximum Standard Dry Density).

Uniform Compaction

5. Compaction testing shall be undertaken in accordance with this Clause, Clause 306U.22 and the Contractor's approved Quality Plan.

6. The Contractor shall adopt compaction methods which will not cause damage or

Precautions

misalignment to underlying and adjacent utility services or adjacent structures.

306U.16 FINAL RESTORATION OF CARRIAGEWAY WEARING SURFACE (COURSE)

1. Final restoration shall be undertaken as soon as practicable and within the time specified in the Contract.
 - (i) Asphaltic concrete wearing surfaces shall be restored using asphaltic concrete supplied and placed in accordance with the Specification for ASPHALTIC CONCRETE. For Regional and State roads, asphaltic concrete shall be supplied and placed in accordance with the requirements of the relevant Road Authority. The thickness and aggregate size of the asphaltic concrete shall match the existing wearing surface *except when otherwise specified by Council.* **Asphaltic Concrete**
 - (ii) Bituminous spray seal surfaces shall be restored to match existing surfaces in accordance with the Specification for SPRAYED BITUMINOUS SURFACING. The thickness and aggregate size of the bituminous wearing surface shall match the existing pavement. Where the bituminous spray seal is underlain by Asphaltic Concrete, the pavement shall be restored in Asphaltic Concrete matching the total thickness of the existing pavements. Small openings in sprayed bituminous pavements can be restored using asphaltic concrete (AS20) minimum thickness 50mm, supplied and placed in accordance with the Specification for ASPHALTIC CONCRETE. **Bituminous Spray Seal**
 - (iii) Restorations in concrete carriageways shall be undertaken in accordance with the requirements of the Specification for: **Concrete**

 MASS CONCRETE SUBBASE with,
 PLAIN OR REINFORCED CONCRETE BASE
 STEEL FIBRE REINFORCED CONCRETE BASE, or
 CONTINUOUSLY REINFORCED CONCRETE BASE, as appropriate.
2. The evenness of the resulting restored surface shall be such that when tested with a 3m straightedge, seven to ten days after completion, departures from the straightedge are less than $\pm 5\text{mm}$ and the surface is such that an impact is not transmitted to traffic passing over the restoration. **Surface Tolerance**
3. The bituminous surfacing tack coat for asphalt or seal coat for sprayed bituminous seals shall present a waterproof surface at application. **Tack Coat**
4. The existing wearing course shall be removed in plan between a distance of 100mm and 400mm beyond the perimeter of any trench excavation as agreed by the Superintendent. The removed material shall be disposed of off-site by the Contractor. Asphalt placed as restoration shall similarly extend in plan a minimum dimension of between 100mm and 400mm beyond the perimeter of any trench excavation as agreed by the Superintendent. **Asphalt Limits**
5. The joint between new and existing asphalt shall be vertical and cut by diamond saw or milling machine. The vertical face of the old asphalt shall be treated by bituminous tack coating. **Joint**
6. Any joints which appear between the existing and new asphalt during the defects maintenance period shall be sealed with a joint sealant approved by the Superintendent.
7. Pavement markings shall be reinstated to match existing pavement markings and in accordance with the Specification for PAVEMENT MARKINGS. **Pavement Markings**

306U.17 FINAL RESTORATION OF PATHWAYS AND DRIVEWAYS

(a) General

1. Final restoration will be undertaken as soon as practicable and within the time specified in the Contract. Pathways, and other public areas, shall be restored with materials consistent with the existing surface before commencement of the Works, or as directed by the Superintendent in consultation with the Council.

2. Prior to final footpath restoration, the temporary pavement material shall be removed and disposed of off-site by the Contractor. The temporary material may remain in place and be incorporated into the final subbase if it complies with the requirements of this Specification for the subbase (including the requirements for compaction and testing) and has not been disturbed or contaminated during removal of the temporary surfacing.

**Remove
Temporary
Material**

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3. Surface levels are to match the levels existing before the surface was disturbed and a smooth junction must be made with the adjacent existing surfaces, covers and features. The variation between the level of the restored surface and the adjacent surface, covers and features is to be no more than 5mm. Where the levels of existing surfaces, covers, or features do not allow the specified level tolerance to be achieved, the restoration shall be at the Superintendent's direction.

**Surface
Tolerance**

4. Pavement Markings shall be reinstated to match existing pavement markings and in accordance with the Specification for PAVEMENT MARKINGS.

**Pavement
Markings**

5. Street furniture, removed and stored, shall be reinstated at locations matching the original location unless directed otherwise by the Superintendent.

**Street
Furniture**

(b) Subbase / Base

1. (i) Subbase material shall consist of fine crushed rock or recycled concrete complying with the Specification for FLEXIBLE PAVEMENTS. The thickness of the subbase shall match the existing subbase (minimum 50mm thickness for footpaths and light duty driveways and 150mm thickness for medium and heavy duty driveways). The subbase shall be compacted to 92 per cent relative compaction when tested in accordance with AS 1289.5.2.1 (Maximum Modified Dry Density) or 95 per cent relative compaction when tested in accordance with AS 1289.5.1.1 (Maximum Standard Dry Density).

Flexible

(ii) Where the existing footpath base is concrete, the base shall be reinstated using 20MPa concrete match the thickness of the existing base.

Rigid

2. Compaction testing shall be undertaken in accordance with this Clause, Clause 306U.22 and the Contractor's approved Quality Plan.

Testing

3. The Contractor shall adopt compaction methods which will not cause damage or misalignment to underlying and adjacent utility services or adjacent structures.

Precautions

(c) Concrete Footpaths and Driveways including Textured and Patterned

1. The minimum width of restorations in concrete footpaths shall comply with section 5.5 of the Streets Opening Conference Information Bulletin.

Compliance

2. Concrete footpaths and driveways shall be restored to the same surface finish and pattern as the original surface.

Match Existing

3. Concrete footpaths shall be constructed in minimum 20MPa concrete to the same thickness (with a minimum of 75mm), as the adjoining footpaths.

Footpaths

4. Light duty driveways serving single residential dwellings shall be constructed in 25MPa concrete to the same thickness (with a minimum of 100mm) as the original driveway. F62 Steel Fabric with 40mm top cover shall be provided where the existing driveway contains reinforcing. **Light Duty Driveways**
5. Medium duty driveways serving multiple residential dwellings and light commercial developments and heavy duty driveways shall be constructed in 25MPa concrete to the same thickness as the original driveway (minimum of 150mm with F72 Steel Fabric with 50mm top cover to reinforcement. **Medium/ Heavy Duty Driveways**
6. In concrete footpaths, expansion joints consisting of a 15mm thick preformed jointing material of bituminous fibreboard, or equivalent approved by the Superintendent, shall be placed in line with joints in existing concrete and at full width transverse joints with existing concrete. **Expansion Joints**
7. Control joints shall be formed strictly in line with the control joints in existing concrete. **Control Joints**
8. Around electricity supply poles, the concrete paving shall be terminated 200mm from the pole and the resulting space filled with cold mix asphalt. **Treatment at Poles**
- (d) Asphalt Footpaths**
1. Asphalt footpaths shall consist of asphalt in accordance with the Specification for ASPHALTIC CONCRETE and shall be constructed to the same thickness as the adjoining footpath and compacted to a smooth even surface. **Match Existing Footpaths**
- (e) Segmental Pavers on Sand Bed**
1. All activities associated with the restoration of segmental pavers shall be carried out to the requirements of the Specification for SEGMENTAL PAVING. **Specification**
2. Existing pavers, taken up and stored, shall be relaid to match the pattern and surface levels of the existing paving. **Match Existing**
3. Cut or damaged pavers shall be replaced with new pavers unless otherwise authorised by the Superintendent. Such new pavers shall be supplied by the Contractor and shall be of the same material, type, size and colour as the existing pavers. **Cut/Damaged Pavers Replaced**
4. The paving pattern at tree surrounds, service boxes, poles, etc, shall match the pattern at similar existing features in the immediate area or be as directed by the Superintendent. **Paving around Trees, etc.**
- (f) Decorative Segmental Paving on Concrete Base**
1. This Sub-Clause applies to the restoration of pathways or driveways with a natural stone, concrete or masonry paver surface or other surface products laid on a mortar bed and concrete base. **Application**
2. The concrete base shall be reconstructed in 25MPa concrete with thickness and reinforcing to match the existing concrete. Where the concrete base is reinforced, the reinforcement shall be tied to the existing reinforcing, either by exposing the reinforcing either side of the restoration to allow a minimum 300mm lap, or by installing tie bars drilled and grouted into the existing concrete. Unless otherwise directed by the Superintendent tie bars shall be 600mm long Y12 reinforcing bars installed at 1000mm centres by drilling 200mm deep 16mm diameter holes at mid-slab depth and grout tie bars into holes using a 1cement:1sand grout mix. In the case if an unreinforced concrete base the sawn face shall be roughened to allow formation of a keyed joint. **Concrete and Reinforcement**
3. Where transverse or longitudinal joints have been disturbed as a result of the Works, they shall be reinstated to match the existing joints. **Jointing**

4. Any pavers adjacent to the trench which have been damaged during the Works shall be removed. Sawcut pavers shall be removed back to the nearest existing joint. **Damaged or Sawcut Pavers**
5. Pavers shall be laid on a mortar bed of the same material and thickness as the existing mortar bed. **Mortar Bed**
6. Existing pavers, taken up and stored, shall be relaid. Cut or damaged pavers shall be replaced with new pavers. Such new pavers shall be supplied by the Contractor and shall be of the same material, type, size, colour and decoration as the existing pavers. The Contractor shall liaise with Council's Restoration Officer to ascertain details related to the supply of pavers. Where existing pavers cannot be sourced, an alternative, as approved by the Superintendent in consultation with Council's Restoration officer, shall be used. **Match Existing Pavers**
7. Pavers shall be laid to match existing surface levels, jointing pattern, gap width and infill material.

306U.18 TURFED VERGES

1. A bed of stockpiled topsoil, or approved imported topsoil, of minimum thickness 50mm, shall be placed on the subgrade prior to restoration of turfed verges. **Topsoil Bed**
2. Existing grass turfs, taken up and stored, shall be relaid to conform with the original grassed surface. Turfs shall be hard butted against each other in rows and the seams top dressed with topsoil. Turf shall be rolled and watered to ensure direct and uniform contact with the topsoil. **Relay Turfs**
3. Any additional turf required to fully restore grassed verges shall be supplied by the Contractor and shall be the same type as the existing grass. **Additional Turf**

306U.19 VERGE PLANTS, SHRUBS AND TREES

1. Stockpiled topsoil, or approved imported topsoil, shall be placed on the subgrade to the same thickness as the surrounding topsoil, prior to replanting. Planting holes shall be excavated, at locations matching the original location unless directed otherwise by the Superintendent in consultation with the relevant Council Officer responsible for road restorations, and the material spread evenly around each hole. **Topsoil Bed**
2. Existing plants, shrubs and trees, taken up and stored which are suitable for replanting, shall be replanted in the prepared holes. The Contractor shall replace any plants which are not suitable for replanting with plants of the same species and size, or as agreed by the Superintendent in consultation with the Council Tree Preservation Officer or other appropriately authorised Council Officer. **Replanting**
3. The planting hole shall be backfilled with topsoil and compacted by foot up to surface level. The shrubs and trees shall be staked as necessary and watered and maintained in accordance with the Specification for LANDSCAPING as necessary to ensure suitable re-establishment. **Compacted, Staked and Watered**
4. Shrubs and trees which fail to re-establish shall be replaced by the Contractor and maintained in accordance with the Specification for LANDSCAPING. **Replacement**

306U.20 CLEANUP

1. Upon completion of all restoration Works, the areas affected by the Works and associated construction activities shall be cleaned up to a condition equivalent to that existing at the commencement of the Works. Surfaces stained by the construction activities shall be cleaned or restored to the satisfaction of the Superintendent.

- 2. All formwork, rubbish and residue construction materials, including material left at stockpiles, shall be legally disposed of off-site by the Contractor.
- 3. Where required by the Superintendent, the Contractor shall present the cleaned up restoration works to the Superintendent for approval.

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306U.21 WORK-AS-EXECUTED DRAWINGS

- 1. The Contractor shall supply the Superintendent with fully marked-up Work-as-Executed Drawings for the whole of the Contract in accordance with the Utility Authorities' Specification.

Submission

306U.22 QUALITY ASSURANCE

- 1. The Contractor must have approved QA accreditation as required by the Contract and an approved Quality Plan for the Works. The Quality Plan shall incorporate all checklists, inspections, testing and documentation as required in Annexure 306UB, and as necessary to ensure that the Works comply with the Contract Documents.

Quality Plan

- 2. Hold Points and Witness Points shall be incorporated into the checklists. Hold Points are to be signed off by the approved Contractor's Representative and the Superintendent. The Superintendent shall be given 24 hours notice of when inspections are required. Where the Superintendent instructs the Contractor that inspection is required at certain Hold Points or Witness Points by Council Officers, the Contractor shall give 24 hours notice to Council.

Hold, Witness Points

- 3. Where allowed by the Quality Plan, the Superintendent may allow the Contractor's nominated inspector to sign off certain Hold Points. This will be determined by the Contractor's performance in relation to the requirements of the Quality Plan and the Contract.

Hold Point Approval by Contractor's Inspector

- 4. Testing shall be conducted in accordance with the frequencies in Annexure 306UC. All work represented by failed tests shall be retested and where necessary rectified.

Testing

- 5. The Superintendent may audit the Contractor's Quality Assurance system as required. The Contractor shall provide full co-operation in providing all information required by the Superintendent.

Auditing

- 6. The provisions for quality assurance are deemed to be included in the rates generally in accordance with this Specification and no additional payment will be paid for compliance with this Clause.

No Additional Payment

SPECIAL REQUIREMENTS

306U.23 RESERVED

306U.24 RESERVED

MEASUREMENT AND PAYMENT

306U.25 PAY ITEMS

1. Payment shall be made for all the activities associated with completing the work detailed in this Specification on a schedule of rates basis in accordance with Pay Items 306U(a) to 306U(p) inclusive.
2. A lump sum price for any of these items shall not be accepted.
3. If any item, for which a quantity of work is listed in the Schedule of Rates, has not been priced by the Contractor it shall be understood that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.
4. Provision for traffic, both vehicular and pedestrian, shall be deemed to be included in the schedule rates generally in accordance with this Specification.
5. Segmental paving works are measured and paid in accordance with this Specification and not in the Specification for SEGMENTAL PAVING.
6. Trenchless installation of utility services under driveways is measured and paid in accordance with the Specification for TRENCHLESS CONDUIT INSTALLATION.

Pay Item 306U (a) SAWCUT EXISTING PAVEMENT/FOOTPATH

- (1) Bituminous Carriageway Pavement
- (2) Bituminous Footpath
- (3) Concrete Footpath, including Textured or Patterned Concrete.

1. The unit of measurement shall be the linear metre measured along the actual line of cut. Separate rates shall be given for sawcuts in each type of material.
2. The schedule rate shall include all activities associated with the sawcutting operations including hire of plant and provision of water.

Pay Item 306U (b) REMOVE EXISTING PAVEMENT/FOOTPATH

1. The unit of measurement shall be the square metre of pavement removed including both bituminous and concrete material and including concrete base from segmental paving where applicable.
2. The width and length shall be as shown on the Drawings or as directed by the Superintendent.
3. The schedule rate shall include all activities associated with breaking out, removing, transporting off-site, disposal and any tipping fees applicable.

Pay Item 306U (c) SEGMENTAL PAVERS (INCLUDING DECORATIVE SEGMENTAL PAVERS)

- (1) Take Up and Stack Existing Pavers - Carriageway
- (2) Take Up and Stack Existing Pavers - Footpath
- (3) Lay Existing Pavers - Carriageway
- (4) Lay Existing Pavers - Footpath
- (5) Supply and Lay New Pavers - Carriageway
- (6) Supply and Lay New Pavers - Footpath

1. The unit of measurement shall be the square metre of surface of segmental pavers (or decorative segmental pavers) taken up or laid. Separate rates shall be given for taking up existing, laying existing and supply and lay new pavers for carriageways or footpaths as appropriate.
2. The width and length shall be as shown on the Drawings or as directed by the Superintendent.
3. The schedule rate, for items 306Uc(1) and 306Uc(2), shall include all activities associated with taking up and stacking pavers on pallets at locations as agreed. Concrete base, where applicable, shall be removed under Pay Item 306U(b).
4. The schedule rate, for items 306Uc(3) and 306Uc(4), shall include all activities involved in the laying and compaction of subbase, including concrete base where applicable, and existing segmental pavers, bedding sand and joint filling sand, mortar bed where applicable, including any cutting of units, concrete edging, joints overlying concrete pavement joints, and concrete surrounds or aprons around surface penetrations.
5. The schedule rate, for items 306Uc(5) and 306Uc(6), shall include all activities involved in the laying and compaction of subbase, including concrete base where applicable, and supply, laying and compaction of segmental pavers, bedding sand and joint filling sand, mortar bed where applicable, including any cutting of units, concrete edging, joints overlying concrete pavement joints, and surrounds or aprons around surface penetrations.

Pay Item 306U (d) REMOVE EXISTING EDGE STRIPS

1. The unit of measurement shall be the linear metre measured along the length of the edge strip.
2. The schedule rate shall include all activities associated with breaking out, removing, transporting off-site, disposal and any tipping fees applicable.

Pay Item 306U (e) GRASS TURF

- (1) Take Up and Store Existing Turf
- (2) Lay Existing Turf
- (3) Supply and Lay New Turf

1. The unit of measurement shall be the square metre of surface of grass turf taken up or laid. Separate rates shall be given for taking up existing, laying existing and supply and lay new turf.
2. The width and length shall be as shown on the Drawings or as directed by the Superintendent.
3. The schedule rate, for item 306Ue(1), shall include all activities associated with cutting, taking up and storing turf.
4. Grass unsuitable for reuse shall be removed under Pay Item 306Uh(2).
5. The schedule rate, for item 306Ue(2), shall include all activities associated with the topsoil bedding, rolling, laying of existing turf and topdressing.

6. The schedule rate, for item 306Ue(3), shall include all activities associated with the topsoil bedding, rolling, supply and laying of new turf and topdressing.

Pay Item 306U (f) VERGE PLANTS, SHRUBS AND TREES

- (1) Take Up and Store Existing
- (2) Plant Existing
- (3) Plant New
- (4) Disposal of Unsuitable

1. The unit of measurement shall be each plant, shrub or tree taken up or planted (excludes Pay Item 306Uf(4)). Separate rates shall be given for taking up existing, replanting existing and supply and plant new plants, shrubs or trees.

2. The schedule rate, for item 306Uf(1), shall include all activities associated with taking up, storing and watering.

3. The schedule rate, for Item 306Uf(2), shall include all activities associated with topsoil placement, preparatory work, planting, staking and subsequent care of each plant.

4. The schedule rate for Item 306Uf(3), shall include all activities associated with topsoil placement, preparatory work, supply and planting, staking and subsequent care of each new plant.

5. The unit of measurement for Pay Item 306Uf(4) shall be the cubic metre of unsuitable plants, shrubs and trees.

6. The schedule of rate for Item 306Uf(4), shall include all activities associated with transporting off-site, disposal and any tipping fees applicable.

Pay Item 306U (g) STOCKPILING OF TOPSOIL

1. The unit of measurement shall be the cubic metre as bank volume.

2. The volume shall be calculated by multiplying the area, derived from the width and length as shown on the Drawings or as directed by the Superintendent, by the depth of topsoil.

3. The schedule rate shall include all activities associated with stripping topsoil, carting and placing into stockpile.

4. Topsoil to be disposed of off-site shall be removed under Pay Item 306Uh(2).

Pay Item 306U (h) TRENCH EXCAVATION

- (1) To Stockpile
- (2) Disposal off-site (including unsuitable material)

1. The unit of measurement shall be the cubic metre as bank volume of excavation. Separate rates shall be given for excavation to stockpile and disposal off-site.

2. The volume shall be calculated by multiplying the width by the depth by the length as follows:

Width - as specified for the particular utility service installation.
Depth - average actual depth from topsoil stripped ground surface to underside of specified bedding.
Length - actual excavation length, centre to centre of pits.
3. The schedule rate shall be an average rate to cover all types of material encountered during excavation. Separate rates shall not be included for earth and rock.
4. The schedule rate shall include all activities associated with:
 - Excavation, including excavation and replacement of unsuitable material.
 - Replacement for over-excavation for any reason.
 - Protection of trees and treatment to cut tree roots.
5. The schedule rate, for item 306Uh(1), shall include all activities associated with carting and placing into stockpile.
6. The schedule rate, for item 306Uh(2), shall include all activities associated with transporting off-site, disposal and any tipping fees applicable.

Pay Item 306U (i) TRENCH BACKFILL

- (1) From Stockpiled Material
- (2) From Imported Material
- (3) 25:1 Sand/Cement Mix
- (4) 14:1 Sand/Cement Mix

1. The unit of measurement shall be the cubic metre measured as backfill compacted volume in place in the trench.
2. The volume shall be calculated by multiplying the width by the depth by the length as follows:

Width - average trench width
Depth - average actual depth from top of subgrade to top of bedding overlay material around the utility service.
Length - actual trench length, centre to centre of pits.
3. The schedule rate shall include all activities associated with backfilling (including supply and installation of geotextile where appropriate), compaction, testing and treatment around tree roots.
4. The schedule rate, for item 306Ui(1), shall include all activities associated with loading and carting from stockpile.
5. The schedule rate, for items 306Ui(2), 306Ui(3) and 306Ui(4) shall include all activities associated with supply and delivery of imported material, including material for a selected material zone where specified.

Pay Item 306U (j) TEMPORARY PAVEMENT - CARRIAGEWAY AND FOOTPATH

1. The unit of measurement shall be the square metre of trench area restored with temporary pavement.

2. The area shall be calculated by multiplying the trench width by the actual length of temporarily restored pavement.
3. The schedule rate shall include all activities associated with the supply, delivery, placing and compaction of the base material and bituminous cold mix. It shall include all activities and material necessary for maintenance of the temporary pavement in a safe condition until the permanent restoration is executed.

Pay Item 306U (k) TEMPORARY STEEL PLATING

1. The unit of measurement shall be the square metre of trench area plus adequate allowance for support on both sides of the trench.
2. The area shall be calculated by multiplying the trench width by the actual length of trench to be covered.
3. The schedule rate shall include all activities associated with the hire, delivery, placement, securing and subsequent removal and return to depot of the steel plates. It shall include all activities and materials necessary for maintenance of the plating until permanent restoration is executed.

Pay Item 306U (l) FLEXIBLE SUBBASE

1. The unit of measurement shall be the square metre of trench.
2. The area shall be calculated by multiplying the trench width by the length.
3. The schedule rate shall include all activities associated with the removal of temporary pavement, supply, delivery, spreading and compaction.

Pay Item 306U (m) FLEXIBLE BASE

1. The unit of measurement shall be the square metre of trench.
2. The area shall be calculated by multiplying the trench width by the length.
3. The schedule rate shall include all activities associated with the removal of temporary pavement where no subbase is required, supply, delivery, spreading and compaction.

Pay Item 306U (n) CARRIAGEWAY WEARING SURFACE (COURSE)

- (1) Asphaltic Concrete
- (2) Sprayed Bituminous Surfacing
- (3) Concrete

1. The unit measurement shall be the square metre of new surface area in accordance with this Specification.
2. The area shall be calculated by multiplying the trench width +200mm (or up to 800mm as agreed) by the length.
3. The schedule rate shall include all activities associated with the removal of temporary pavement or existing pavement to the new perimeter, supply, delivery, spreading, compaction and provision of pavement markings as appropriate.
4. The schedule rate, for item 306Un(3) shall include all activities associated with the forming, compaction of foundations, supply, delivery and compaction of mass concrete subbase, supply, delivery, placing, finishing and curing concrete base. Where shown on the Drawings or as directed by the Superintendent this pay item shall include the supply and placement of reinforcing steel and the provision of pavement markings as appropriate.

Pay Item 306U (o) FOOTPATHS AND DRIVEWAYS

- (1) Asphalt/Sprayed bituminous seal
- (2) Plain Concrete
- (3) Textured/Patterned Concrete

1. The unit of measurement shall be the square metre of paved surface, including driveways. Separate rates shall be given for each thickness of footpath or driveway.
2. The width and length shall be as shown on the Drawings or as Directed by the Superintendent.
3. The schedule rate, for item 306Uo(1), shall include all activities associated with the forming, compaction of foundations, supply, delivery and compaction of subbase and bituminous material.
4. The schedule rate, for items 306Uo(2) and 306Uo(3) shall include all activities associated with the forming, compaction of foundations, supply, delivery and compaction of subbase, supply delivery, placing, finishing and curing concrete, including texturing or patterned finish where applicable. Where shown on the Drawings or as directed by the Superintendent this pay item shall include the supply and placement of reinforcing steel.

Pay Item 306U (p) CLEANUP

1. The unit of measurement shall be the square metre of carriageway and/or footway surface or other surface as applicable.
2. The lengths and widths shall be as shown on the Drawings or as directed by the Superintendent.
3. The schedule rate shall include all activities associated with the cleaning up of the Work site, and transporting off-site and disposal of material including any tipping fees applicable.

ANNEXURE 306UA

1. TYPICAL FINAL RESTORATION IN FOOTPATH

	Zone	Zone Thickness	Material	Compaction Requirement
	Wearing Surface (Course)	100mm min Concrete Asphalt – match existing (40mm min.) Segmental Paving on sand bed – match existing Segmental Decorative Paving on Concrete Base – match existing	As specified in Clause 306U.17	
	Subbase/ Base Course	Match existing thickness (minimum 50mm) Segmental Decorative Paving on Concrete Base – subbase only required if existing	As specified in Clause 306U.17	92% MMDD or 95% MSDD
	Subgrade	Varies	As specified in Clause 306U.11	90% MSDD or Density Index 70
	Bedding Zone	As per Utility Authority's Specification	As per Utility Authority's Specification	As per Utility Authority's Specification

ANNEXURE 306UA

2. TYPICAL FINAL RESTORATION IN CARRIAGEWAY OR HEAVY DUTY DRIVEWAY

		Backfill Zone	Backfill Zone Thickness	Backfill Material	Compaction Requirement
Reinstatement Width 	Finished Surface Level				
	Base Level	Wearing Surface (Course)	As specified by Council, otherwise match existing	Asphalt in CBD locations otherwise Match existing	
	Subbase Level	Base Course	Match existing	As specified in Clause 306U.15	98% MMDD or 102% MSDD
	Subgrade Level	Subbase course	Match existing	As specified in Clause 306U.15	
			Subgrade	Varies	As specified in Clause 306U.11
		Bedding Zone	As per Utility Authority's Specification	As per Utility Authority's Specification	As per Utility Authority's Specification

**ANNEXURE 306UB
INSPECTION AND TESTING REQUIREMENTS**

Clause	Description	Inspection/Testing Requirement	Documentation
306U.01.4	Excavation in concrete carriageway	Superintendent's Approval	Instruction from Superintendent
306U.01.5	Restoration work in addition to specified work	Superintendent's Approval	Instruction from Superintendent
306U.01.6	Environmental Management Plan prepared and implemented	Hold Point	Superintendent's Approval
306U.04	Traffic Guidance scheme prepared and implemented	Hold Point	Superintendent's Approval
306U.05	Excavation setout	Hold Point	Superintendent's Approval
306U.08.3,4	Existing services located	Checklist	Contractor Checklist Signoff
306U.08.5	Trench Base	Witness Point (3)	Superintendent's Optional Approval or Contractor's Checklist Signoff
306U.08.7	Unsuitable material replaced	Witness Point (3)	Superintendent's Optional Approval or Contractor's Checklist Signoff
306U.10	Bedding & overlay materials and installation in accordance with Utility Authorities' requirements	Hold Point Material Tests (1) Compaction Tests (1)	Superintendent's Approval Test Certificates Test Certificates
306U.11	Trench Backfill Material	Material Tests	Test Certificates
306U.12	Trench Backfill Compaction	Compaction Tests Witness Point (3)	Test Certificates Superintendent's Optional Approval or Contractor's Checklist Signoff
306U.13.3	Paved areas prepared for restoration	Hold Point	Superintendent's Approval
306U.15	Carriageway Subbase and Base	Witness Point (2) (3) Material Tests Compaction Tests	Superintendent's Optional Approval or Contractor's Checklist Signoff Test Certificates Test Certificates
306U.16	Carriageway Wearing Surface (Course)	Material Tests	Test Certificates
306U.17	Pathway Subbase	Witness Point (2) (3) Material Tests Compaction Tests	Superintendent's Optional Approval or Contractor's Checklist Signoff Test Certificates Test Certificates
306U.17	Pathway Surface	Material Tests	Test Certificates. Evidence of Council Approval if changing surface finish from existing
306U.20.3	Restoration Completed	Witness Point (3)	Superintendent's Optional Approval or Contractor's Checklist Signoff

- NOTES:
1. Where required by Utility Authorities' Specification.
 2. Hold Point if Contractor intends to leave temporary base/subbase in place.
 3. Contractor to give 24 hours notice to the Superintendent for optional attendance and inspection. If option not exercised, then Contractor to signoff on the Quality Checklist

**ANNEXURE 306UC
MINIMUM TESTING FREQUENCY**

Activity	Key Quality Verification Requirements	Minimum Test Frequency	Test Method
Trench Backfill Under Carriageways and Footpaths, Materials Supply	Material properties as specified in this Specification	1 per contract or source of supply for each type of material used or suppliers test certificates. Minimum 1 per 500m ³ or as required by the relevant AUS-SPEC Pavement Specification.	As specified
Trench Backfill Under Carriageways and Footpaths, Placement	Compaction	1 per 2 layers per 100 lineal metres of trench or per 20 road openings for openings of less than 10m ² plan area whichever results in the most frequent testing.	AS 1289.5.1.1 AS 1289.5.2.1 AS 1289.5.6.1
Subbase and Base Materials Supply	Material properties as specified	Suppliers test certificates in accordance with the relevant AUS-SPEC Pavement Specification.	As specified
Subbase and Base Placement	Compaction	1 per pavement layer, per 100 lineal metres of trench or per 20 road openings for openings of less than 10m ² plan area whichever results in the most frequent testing.	AS 1289.5.1.1 AS 1289.5.2.1
Wearing Surface Materials	Material properties as specified in the relevant AUS-SPEC Pavement Specification	Supplier test certificates in accordance with the relevant AUS-SPEC Pavement Specification.	As specified
Wearing Surface Placement	Testing as specified in the relevant AUS-SPEC Pavement Specification	Check evenness of restored surface in accordance with Clause 306U.16.2.	As specified

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