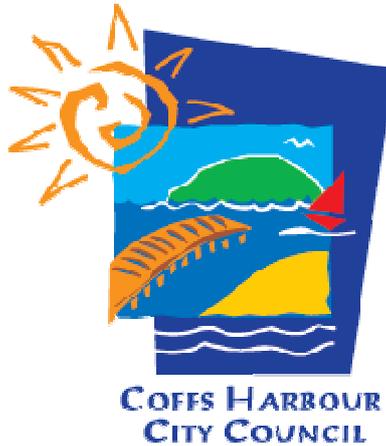


***COFFS HARBOUR CITY COUNCIL***



**DEVELOPMENT SPECIFICATION  
DESIGN**

***1152 Road openings and restorations (Utilities)***

***Version 1      01 January 2009***

<b>1152 ROAD OPENINGS AND RESTORATIONS (UTILITIES)</b>
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## **1 SCOPE AND GENERAL**

### **1.1 SCOPE**

The work to be executed under this worksection 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 worksection 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.

The worksection 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.

This worksection excludes the installation activities of the relevant public utility service.

### **1.2 QUALITY**

Requirements for quality control and testing are given in **Quality assurance** and *0161 Quality (Construction)*.

### **1.3 REFERENCED DOCUMENTS**

The following documents referred to in this worksection shall be deemed as the latest edition of the Australian Standards, including amendments and supplements.

#### **Worksections**

*0161 Quality (Construction)*  
*0179 General Requirements (Construction)*  
*0250 Open space- landscaping*  
*1101 Control of traffic*  
*1132 Mass concrete subbase*  
*1133 Plain and reinforced concrete base*  
*1134 Steel fibre reinforced concrete base*  
*1135 Continuously reinforced concrete base*  
*1141 Flexible pavements*  
*1142 Bituminous cold mix*  
*1143 Sprayed bituminous surfacing*  
*1144 Asphaltic concrete (Roadways)*  
*1145 Segmental paving*  
*1191 Pavement markings*  
*1392 Trenchless conduit installation*

#### **Standards**

AS 1289	Methods for testing soils for engineering purposes
AS 1289.5.1.1	Determination of the dry density/moisture content relation of a soil using standard compactive effort
AS 1289.5.2.1	Determination of the dry density/moisture content relation of a soil using modified compactive effort
AS 1289.5.6.1	Compaction control test—Density Index method for cohesionless material
AS 1289.6.1.2	Soil strength and consolidation tests—Determination of the California Bearing Ratio of a soil—Standard laboratory method for an undisturbed specimen
AS 1348	Road and traffic engineering—Glossary of terms

AS 1742	Manual of uniform traffic control devices
AS 1742.3	Traffic control devices for works on roads
AS 4000	General conditions of contract
AS/NZS ISO 8402	Quality management and quality assurance - Vocabulary (available superseded)

#### **Other publications**

Street Openings Conference

Guide to codes and practices for street openings, 2007

The Utility Authorities' Specifications

The Model Agreement for Local Councils and Utility/Service Providers

Commonwealth Department of Housing and Regional Development

Australian Model Code for Residential Development. (AMCORD). A National Resource Document for Residential Development—1995:

### **1.4 DEFINITIONS**

For the purposes of this worksection 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:

The text in brackets is additional to the referenced definitions.

The terms are:

#### **- AS 1348.1**

- . 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.

#### **- AMCORD**

- . Verge: That part of the road reserve between the carriageway and the road reserve boundary.

#### **- AS/NZS ISO 8402 (Available suspended)**

- . Hold Point (HP): 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.
- . Witness Point (WP): 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.
- . 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.

- **AS 4000**

- . 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.

- **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.

### 1.5 UTILITY SERVICES UNDER CONCRETE ROAD PAVEMENTS

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.

Utility services under these carriageway pavements shall be installed in accordance with 1392 *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 **Final restoration of carriageway subbase and base (flexible)** or the relevant Road Authorities' requirements.

### 1.6 ADDITIONAL WORK

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 worksection.

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.

### 1.7 ENVIRONMENTAL CONTROL MEASURES

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.

The Superintendent's approval of the Environment management plan is required prior to release of the hold point.

## 1.8 MATERIALS DISPOSAL, RECYCLING

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.

## 1.9 PROVISION FOR TRAFFIC

### Safety and traffic obstruction

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

### Traffic Guidance Scheme

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.

The Superintendent's approval of the Traffic Guidance Scheme is required prior to release of the 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.

### Access to properties adjacent to the works

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 Guidance Scheme on businesses and around commercial areas.

### State and regional roads

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.

### Local road closures

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.

## 2 CLEARING

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### 2.1 SET OUT

#### Initial limits

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.

#### Adjusted limits

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:

- Pathways: 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:
  - . Bitumen and concrete paving—In accordance with the reinstatement provisions and sketches of the above Information Bulletin.
  - . Segmental pavers—The set out line shall be at least one whole unit clear of both sides of the minimal alignment of the trench.
  - . 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.  
Where the Superintendent directs that driveways are not to be disturbed, the utility services under driveways shall be installed in accordance with 1392 *Trenchless conduit installation*, or the Utility Authorities' worksection, as directed by the Superintendent.
- Carriageways: 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 **Final restoration of carriageway subbase and base (flexible)**. 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.  
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 or Work, to obtain protection or relocation requirements.
- Inspection and approval: 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 Superintendent's approval of the set out line is required prior to release of the 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.

## 2.2 SURFACE TREATMENT REMOVAL

### Sawcut

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.

### Concrete and asphalt

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 **Environmental control measures**.

### Pavers and dimension stones

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.

### Decorative pavers

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.

**Paver edging**

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.

**Grass**

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.

**Plants, shrubs, trees**

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.

**Unsuitable vegetation**

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.

**Street furniture**

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 stored.

**House SW and service pipes contractor's cost**

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.

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**3 EXCAVATION**

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**3.1 TOPSOIL**

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.

**3.2 TRENCH EXCAVATION**

**In accordance with drawings**

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

**Safety**

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

**Requirements of other public utility authorities**

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.

### **Location of services**

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.

### **Excavation level**

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.

### **Stockpiles**

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.

### **Disposal of unsuitable material**

Any material at the bottom of the trench or at foundation level which is unsuitable, in accordance with the Utility Authorities' worksection, shall be removed and legally disposed of off-site by the Contractor and replaced with backfill material in accordance with the documented requirements of this worksection.

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.

### **Contaminated, hazardous material**

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.

## **3.3 PROTECTION OF TREES**

### **Protected during works**

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.

### **Materials clear of trees**

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.

### **No attachments**

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

### **Work near trees**

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 drip 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.

### **Tree roots**

The Contractor shall not cut tree roots exceeding 50 mm 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.

## 4 BACKFILL

### 4.1 BEDDING ZONES

#### Particular service specification

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

#### Geotextile

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

#### Overlay zone

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 worksection for the particular utility service being installed, provided that the material has the equivalent performance to the backfill material specified in Clauses 4.2 and 4.3 for that location.

This action constitutes a HOLD POINT.

The Superintendent's approval of the overlay zone backfill is required prior to release of the hold point.

### 4.2 TRENCH BACKFILL

#### General

Seepage zones: 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.

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

#### Backfill in verge and landscape areas

Material: Backfill material shall be material passing 75 mm 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.

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

Backfill at trees: 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.

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

#### Backfill to subgrade level under footpaths and carriageways (including heavy duty driveways)

Any of the following materials shall be used:

- sand (shall not be used if the bedding/overlay is coarse aggregate);
- fine crushed rock/recycled concrete in accordance with *1141 Flexible pavements*;
- 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 75 mm and not containing any organic or deleterious material or reactive clay;
- under footpath—25:1 sand/cement mix (compaction testing is not required); under carriageways—14:1 sand/cement mix (compaction testing is not required).

### 4.3 COMPACTION OF TRENCH BACKFILL

#### Requirements

Backfilling shall be compacted to the requirements of Table 4.1 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.

**Table 4.1 Compaction requirements**

<b>Zone</b>	<b>Relative Compaction</b>	<b>Density Index (for Non-Cohesive Materials)</b>	<b>Moisture Content (percent of optimum moisture content)</b>
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 under footpaths and carriageways	98% standard 95% modified	80	Between 60% and 100%

### **Layers**

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

### **Testing frequency**

Compaction tests shall be undertaken by the Contractor at the minimum frequencies shown in Annexure C.

### **Precautions for utility services**

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

## **5 RESTORATION**

### **5.1 GENERAL**

#### **Equivalent condition**

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.

#### **Surface pits, etc**

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.

#### **Paved restoration**

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.

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

### **5.2 TEMPORARY PAVEMENT**

#### **Carriageways**

After backfilling to subgrade level the subbase and base material shall be installed in accordance with Final restoration of carriageway wearing surface (course) 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.

Temporary restoration shall consist of either:

- Bituminous cold mix, in accordance with 1142 *Bituminous cold mix*, 40-50 mm thickness, on the final subbase and base material unless otherwise agreed by the Superintendent.
- Steel plating, over the trench, of sufficient thickness to support traffic loadings and suitably secured with pins and bituminous cold mix.

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

#### **Footpaths, including driveways**

After backfilling to subgrade level the subbase material shall be installed in accordance with **Final restoration of pathways and driveways** 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.

Temporary restoration shall consist of:

- Bituminous cold mix, in accordance with 1142 *Bituminous cold mix*, 20–40 mm 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.

- Sheeting 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.

### **5.3 FINAL RESTORATION OF CARRIAGEWAY SUBBASE AND BASE (FLEXIBLE)**

#### **Remove temporary pavement**

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, the temporary base material may remain in place and be incorporated into the final pavement where it complies with the requirements of this worksection 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.

#### **Settlement of temporary pavement**

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.

#### **Material**

Subbase and base material shall consist of crushed rock or recycled concrete complying with 1141 *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.

#### **Uniform compaction**

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% when tested in accordance with AS 1289.5.2.1 (Maximum Modified Dry Density) or 102 % when tested in accordance with AS 1289.5.1.1 (Maximum Standard Dry Density).

Compaction testing shall be undertaken in accordance with this Clause, Section 6 and the Contractor's approved Quality Plan.

**Precautions for underlying utility services**

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

**5.4 FINAL RESTORATION OF CARRIAGEWAY WEARING SURFACE (COURSE)**

**Timing**

Final restoration shall be undertaken as soon as practicable and within the time specified in the Contract.

**Asphaltic concrete wearing surfaces**

Asphaltic concrete wearing surfaces shall be restored using asphaltic concrete supplied and placed in accordance with 1144 *Asphaltic concrete (Roadways)*.

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.

**Bituminous spray seal surfaces**

Bituminous spray seal surfaces shall be restored to match existing surfaces in accordance with 1143 *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 50 mm, supplied and placed in accordance with 1144 *Asphaltic concrete (Roadways)*.

**Concrete carriageways**

Restorations in concrete carriageways shall be undertaken in accordance with the requirements of the worksection for 1132 *Mass concrete subbase*, 1133 *Plain and reinforced concrete base*, 1134 *Steel fibre reinforced concrete base* or 1135 *Continuously reinforced concrete base*, as appropriate.

**Surface tolerance**

The evenness of the resulting restored surface shall be such that when tested with a 3 m straightedge, seven to ten days after completion, departures from the straightedge are less than  $\pm 5$  mm and the surface is such that an impact is not transmitted to traffic passing over the restoration.

**Tack coat**

The bituminous surfacing tack coat for asphalt or seal coat for sprayed bituminous seals shall present a waterproof surface at application.

**Asphalt limits**

The existing wearing course shall be removed in plan between a distance of 100 mm and 400 mm 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 100 mm and 400 mm beyond the perimeter of any trench excavation as agreed by the Superintendent.

**Joint between new and existing asphalt**

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.

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.

**Pavement markings**

Pavement markings shall be reinstated to match existing pavement markings and in accordance with 1191 *Pavement markings*.

## 5.5 FINAL RESTORATION OF PATHWAYS AND DRIVEWAYS

### General

Timing: 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.

Removal Temporary Material: 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 Worksection for the subbase (including the requirements for compaction and testing) and has not been disturbed or contaminated during removal of the temporary surfacing.

Surface tolerance: 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 5 mm. 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.

Pavement markings: Pavement Markings shall be reinstated to match existing pavement markings and in accordance with 1191 *Pavement markings*.

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

### Subbase / Base

Flexible: Subbase material shall consist of fine crushed rock or recycled concrete complying with 1191 *Pavement markings*.

Thickness: The thickness of the subbase shall match the existing subbase (minimum 50 mm thickness for footpaths and light duty driveways and 150 mm thickness for medium and heavy duty driveways).

Compaction: 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% relative compaction when tested in accordance with AS 1289.5.1.1 (Maximum Standard Dry Density).

Rigid: Where the existing footpath base is concrete, the base shall be reinstated using 20 MPa concrete match the thickness of the existing base.

Testing: Compaction testing shall be undertaken in accordance with this Clause, Quality Assurance and the Contractor's approved Quality Plan.

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

### Concrete footpaths and driveways including textured and patterned

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

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

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

Light duty driveways: Light duty driveways serving single residential dwellings shall be constructed in 25 MPa concrete to the same thickness (with a minimum of 100 mm) as the original driveway.

F62 Steel Fabric with 40 mm top cover shall be provided where the existing driveway contains reinforcing.

Medium/heavy duty driveways: Medium duty driveways serving multiple residential dwellings and light commercial developments and heavy duty driveways shall be constructed in 25 MPa concrete to the same thickness as the original driveway (minimum of 150 mm with F72 Steel Fabric with 50 mm top cover to reinforcement).

Expansion joints: In concrete footpaths, expansion joints consisting of a 15 mm 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.

Control joints: Control joints shall be formed strictly in line with the control joints in existing concrete.

Treatment at poles: Around electricity supply poles, the concrete paving shall be terminated 200 mm from the pole and the resulting space filled with cold mix asphalt.

### **Asphalt footpaths**

Asphalt footpaths shall consist of asphalt in accordance with 1144 *Asphaltic concrete (Roadways)* and shall be constructed to the same thickness as the adjoining footpath and compacted to a smooth even surface.

### **Segmental pavers on sand bed**

Specification: All activities associated with the restoration of segmental pavers shall comply with 1145 Segmental paving.

Match existing with existing pavers: Existing pavers, taken up and stored, shall be relaid to match the pattern and surface levels of the existing paving.

Cut/damaged pavers replaced: 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.

Paving around trees: 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.

### **Decorative segmental paving on concrete base**

Application: 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.

Concrete base: The concrete base shall be reconstructed in 25 MPa 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 300 mm lap, or by installing tie bars drilled and grouted into the existing concrete.

Unless otherwise directed by the Superintendent tie bars shall be 600 mm long Y12 reinforcing bars installed at 1000 mm centres by drilling 200 mm deep 16 mm diameter holes at mid-slab depth and grout tie bars into holes using a 1cement:1sand grout mix. In the case of an unreinforced concrete base the sawn face shall be roughened to allow formation of a keyed joint.

Jointing: Where transverse or longitudinal joints have been disturbed as a result of the Works, they shall be reinstated to match the existing joints.

Damaged or sawcut pavers: 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.

Mortar bed: Pavers shall be laid on a mortar bed of the same material and thickness as the existing mortar bed.

Match existing pavers: 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. Pavers shall be laid to match existing surface levels, jointing pattern, gap width and infill material.

## **5.6 TURFED VERGES**

### **Topsoil bed**

A bed of stockpiled topsoil, or approved imported topsoil, of minimum thickness 50 mm, shall be placed on the subgrade prior to restoration of turfed verges.

### **Relay turfs**

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.

### **Additional turf**

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.

## **5.7 VERGE PLANTS, SHRUBS AND TREES**

### **Topsoil bed**

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.

### **Replanting**

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.

### **Compacted, staked and watered**

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 0250 *Open space- landscaping* as necessary to ensure suitable re-establishment.

### **Replacement**

Shrubs and trees which fail to re-establish shall be replaced by the Contractor and maintained in accordance with 0250 *Open space- landscaping*.

## **5.8 CLEANUP**

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.

All formwork, rubbish and residue construction materials, including material left at stockpiles, shall be legally disposed of off-site by the Contractor.

Where required by the Superintendent, the Contractor shall present the cleaned up restoration works to the Superintendent for approval.

## **5.9 WORK-AS-EXECUTED DRAWINGS**

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.

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## **6 QUALITY ASSURANCE**

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### **6.1 QUALITY PLAN**

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 B, and as necessary to ensure that the Works comply with the Contract Documents.

### **6.2 HOLD AND WITNESS POINTS**

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.

### **6.3 HOLD POINT APPROVAL BY CONTRACTOR'S INSPECTOR**

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.

## 6.4 TESTING

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

## 6.5 AUDITING

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.

## 6.6 NO ADDITIONAL PAYMENT

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

## 7 MEASUREMENT AND PAYMENT

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### 7.1 MEASUREMENT

Payment shall be made for all the activities associated with completing the work detailed in this worksection on a schedule of rates basis in accordance with Pay Items 1152.1 to 1152.16 inclusive.

A lump sum price for any of these items shall not be accepted.

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.

Provision for traffic, both vehicular and pedestrian, shall be deemed to be included in the schedule rates generally in accordance with this worksection.

Segmental paving works are measured and paid in accordance with this worksection and not 1145 *Segmental paving*.

Trenchless installation of utility services under driveways is measured and paid in accordance with 1392 *Trenchless conduit installation*.

### 7.2 PAY ITEMS

#### 1152.1 Sawcut existing pavement/footpath

- 1152.1(1) Bituminous carriageway pavement
- 1152.1(2) Bituminous footpath
- 1152.1(3) Concrete footpath, including textured or patterned concrete.

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.

The schedule rate shall include all activities associated with the sawcutting operations including hire of plant and provision of water.

#### 1152.2 Remove existing pavement/footpath

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.

The width and length shall be as shown on the Drawings or as directed by the Superintendent.

The schedule rate shall include all activities associated with breaking out, removing, transporting off-site, disposal and any tipping fees applicable.

#### 1152.3 Segmental pavers (including decorative segmental pavers)

- 1152.3(1) Take up and stack existing pavers—Carriageway
- 1152.3(2) Take up and stack existing pavers—Footpath
- 1152.3(3) Lay existing pavers—Carriageway
- 1152.3(4) Lay existing pavers—Footpath
- 1152.3(5) Supply and lay new pavers—Carriageway
- 1152.3(6) Supply and lay new pavers—Footpath

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.

The width and length shall be as shown on the Drawings or as directed by the Superintendent.

The schedule rate, for items 1152.3(1) and 1152.3(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 1152(2).

The schedule rate, for items 1152.3(3) and 1152.3(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.

The schedule rate, for items 1152.3(5) and 1152.3(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.

#### **1152.4 Remove existing edge strips**

The unit of measurement shall be the linear metre measured along the length of the edge strip.

The schedule rate shall include all activities associated with breaking out, removing, transporting off-site, disposal and any tipping fees applicable.

#### **1152.5 Grass turf**

- 1152.5(1) Take up and store existing turf
- 1152.5(2) Lay existing turf
- 1152.5(3) Supply and lay new turf

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.

The width and length shall be as shown on the Drawings or as directed by the Superintendent.

The schedule rate, for item 1152.5(1), shall include all activities associated with cutting, taking up and storing turf.

Grass unsuitable for reuse shall be removed under Pay Item 1152.5(2).

The schedule rate, for item 1152.5(2), shall include all activities associated with the topsoil bedding, rolling, laying of existing turf and topdressing.

The schedule rate, for item 1152.5(3), shall include all activities associated with the topsoil bedding, rolling, supply and laying of new turf and topdressing.

#### **C0219.6 Verge plants, shrubs and trees**

- 1152.6(1) Take up and store existing
- 1152.6(2) Plant existing
- 1152.6(3) Plant new
- 1152.6(4) Disposal of unsuitable

The unit of measurement shall be each plant, shrub or tree taken up or planted (excludes Pay Item 1152.6(4)). Separate rates shall be given for taking up existing, replanting existing and supply and plant new plants, shrubs or trees.

The schedule rate, for item 1152.6(1), shall include all activities associated with taking up, storing and watering.

The schedule rate, for Item 1152.6(2), shall include all activities associated with topsoil placement, preparatory work, planting, staking and subsequent care of each plant.

The schedule rate for Item 1152.6(3) shall include all activities associated with topsoil placement, preparatory work, supply and planting, staking and subsequent care of each new plant.

The unit of measurement for Pay Item 1152.6(4) shall be the cubic metre of unsuitable plants, shrubs and trees.

The schedule of rate for Item 1152.6(4) shall include all activities associated with transporting off-site, disposal and any tipping fees applicable.

### 1152.7 Stockpiling of topsoil

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

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.

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

Topsoil to be disposed of off-site shall be removed under Pay Item C0219.8(2).

### 1152.8 Trench excavation

- 1152.8(1) To stockpile
- 1152.8(2) Disposal off-site (including unsuitable material)

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.

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.

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.

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.

The schedule rate, for item 1152.8(1), shall include all activities associated with carting and placing into stockpile.

The schedule rate, for item 1152.8(2), shall include all activities associated with transporting off-site, disposal and any tipping fees applicable.

### 1152.9 Trench backfill

- 1152.9(1) From stockpiled material
- 1152.9(2) From imported material
- 1152.9(3) 25:1 sand/cement mix
- 1152.9(4) 14:1 sand/cement mix

The unit of measurement shall be the cubic metre measured as backfill compacted volume in place in the trench.

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.

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.

The schedule rate, for item 1152.1, shall include all activities associated with loading and carting from stockpile.

The schedule rate, for items 1152.2, 1152.3 and 1153.4 shall include all activities associated with supply and delivery of imported material, including material for a selected material zone where specified.

### 1152.10 Temporary pavement—Carriageway and footpath

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

The area shall be calculated by multiplying the trench width by the actual length of temporarily restored pavement.

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.

**1152.11 Temporary steel plating**

The unit of measurement shall be the square metre of trench area plus adequate allowance for support on both sides of the trench.

The area shall be calculated by multiplying the trench width by the actual length of trench to be covered.

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.

**1152.12 Flexible subbase**

The unit of measurement shall be the square metre of trench.

The area shall be calculated by multiplying the trench width by the length.

The schedule rate shall include all activities associated with the removal of temporary pavement, supply, delivery, spreading and compaction.

**1152.13 Flexible base**

The unit of measurement shall be the square metre of trench.

The area shall be calculated by multiplying the trench width by the length.

The schedule rate shall include all activities associated with the removal of temporary pavement where no subbase is required, supply, delivery, spreading and compaction.

**1152.14 Carriageway wearing surface (course)**

- 1152.14(1) Asphaltic concrete
- 1152.14(2) Sprayed bituminous surfacing
- 1152.14(3) Concrete

The unit measurement shall be the square metre of new surface area in accordance with this Worksection.

The area shall be calculated by multiplying the trench width +200 mm (or up to 800 mm as agreed) by the length.

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.

The schedule rate, for item 1152.14(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.

**1152.15 Footpaths and driveways**

- 1152.15(1) Asphalt/sprayed bituminous seal
- 1152.15(2) Plain concrete
- 1152.15(3) Textured/patterned concrete

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.

The width and length shall be as shown on the Drawings or as Directed by the Superintendent.

The schedule rate, for item 1152.15(1), shall include all activities associated with the forming, compaction of foundations, supply, delivery and compaction of subbase and bituminous material.

The schedule rate, for items 1152.15(2) and 1152.15(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.

**1152.16 Cleanup**

The unit of measurement shall be the square metre of carriageway and/or footway surface or other surface as applicable.

The lengths and widths shall be as shown on the Drawings or as directed by the Superintendent.  
 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.

**8 ANNEXURE A**

**8.1 TYPICAL FINAL RESTORATION IN FOOTPATH**

Reinstatement Width	Zone	Zone thickness	Material	Compaction Requirement
	Wearing Surface (Course)	75 mm min concrete Asphalt—match existing Segmental paving on sand bed—match existing Segmental decorative paving on concrete base—match existing	As specified in Final restoration of pathways and driveways	
	Subbase/ Base Course	Match existing thickness (minimum 50 mm) Segmental decorative paving on concrete base—subbase only required if existing	As specified in Final restoration of pathways and driveways	92% MMDD or 95% MSDD
	Subgrade	Varies	As specified in Trench backfill	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

8.2 TYPICAL FINAL RESTORATION IN CARRIAGEWAY OR HEAVY DUTY DRIVEWAY

Reinstatement Width		Backfill zone	Backfill zone thickness	Backfill material	Compaction requirement
<p>Finished surface level</p> <p>Base level</p> <p>Subbase level</p> <p>Subgrade level</p>		Wearing Surface (Course)	Match existing	Match existing	
		Base Course	Match existing	As specified in Final restoration of carriageway subbase and base (flexible)	98% MMDD or 102% MSDD
		Subbase course	Match existing	As specified in Final restoration of carriageway subbase and base (flexible)	
		Subgrade	Varies	As specified in Trench backfill	98% MSDD or 95% MMDD Density Index 80
		Bedding Zone	As per Utility Authority's Specification	As per Utility Authority's Specification	As per Utility Authority's Specification

## 9 ANNEXURE B

## 9.1 INSPECTION AND TESTING REQUIREMENTS

Worksection Clause Reference	Inspection/testing requirement	Documentation
Utility services under concrete road pavements	Superintendent's approval	Instruction from Superintendent
Additional work	Superintendent's Approval	Instruction from Superintendent
Environmental control measures	Hold Point	Superintendent's approval
Provision for traffic	Hold Point	Superintendent's approval
Set out	Hold Point	Superintendent's approval
Trench excavation (Requirements of other public utility authorities)	Checklist	Contractor Checklist Signoff
Trench excavation (Excavation level)	Witness Point (3)	Superintendent's optional approval or Contractor's Checklist Signoff
Trench excavation (Disposal of unsuitable material)	Witness Point (3)	Superintendent's optional approval or Contractor's Checklist Signoff
Bedding zones	Hold Point Material Tests (1) Compaction Tests (1)	Superintendent's approval Test Certificates Test Certificates
Trench backfill	Material tests	Test Certificates
Compaction of trench backfill	Compaction tests Witness Point (3)	Test Certificates Superintendent's optional approval or Contractor's Checklist Signoff
Restoration (Paved restoration)	Hold Point	Superintendent's approval
Final restoration of carriageway subbase and base (flexible)	Witness Point (2) (3) Material Tests Compaction Tests	Superintendent's optional approval or Contractor's Checklist Signoff Test Certificates Test Certificates
Final restoration of carriageway wearing surface (course)	Material Tests	Test Certificates
Final restoration of pathways and driveways (Subbase/Base0	Witness Point (2) (3) Material Tests Compaction Tests	Superintendent's optional approval or Contractor's Checklist Signoff Test Certificates Test Certificates
Final restoration of pathways and driveways (Concrete footpaths and driveways including textured and patterned)	Material Tests	Test Certificates. Evidence of Council Approval if changing surface finish from existing
Cleanup	Witness Point (3)	Superintendent's Optional Approval or Contractor's Checklist Signoff

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.

10 ANNEXURE C

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 500 m <sup>3</sup> 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 10 m <sup>2</sup> 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 10 m <sup>2</sup> 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 <b>Final restoration of carriageway wearing surface (course)</b>	As specified