



AUS-SPEC

Infrastructure Specifications

1152 Road openings and restoration
(Utility Authorities)

1152 ROAD OPENINGS AND RESTORATION (UTILITIES)

IMPORTANT: This document has been adapted from the NATSPEC suite of specification templates for use in the Cessnock City Council area by both Council and industry. NATSPEC regularly updates the base templates (currently in April and October each year), and Council may incorporate changes into its version of AUS-SPEC from time to time. To assist in highlighting any changes made by Council to the NATSPEC templates, the following conventions are used.

- See ANNEXURE M at the end of this document which contains (where practical) Cessnock City Council customisations (also known as 'office master' text). References to the Annexure are to also be inserted at relevant clauses in the main body of the document.
- Where content is added to the main body of the document, it is to be shown **in brown text like this**.
- Where content is deleted or excluded from the main body of the document, it is to be shown ~~struck through like this~~. Such clauses are to have no effect.

Where there is a conflict between main body text and Cessnock City Council specific clauses, Council's specific clauses shall prevail.

1 GENERAL

1.1 RESPONSIBILITIES

General

Application: This worksection is applicable to road openings and restoration works for the installation of underground utility services within public road reserves or reserves under the control of local government authorities, for contracts let by a public Utilities Authority. It sets out default Council requirements in order to expedite works by or on behalf of Utility Authorities only.

Exclusion: This worksection does not apply to works within the scope of the following:

- 1151 Road openings and restoration. That worksection applies to road openings and restoration works by or on behalf of third parties other than a Utilities Authority, including for example private developers.
- 1392 Trenchless conduit installation.

Requirement: Provide road opening and restoration works for installation of underground services within public road reserves or reserves under Council control including clearing, excavation, backfilling and restoration of surfaces, as documented. ~~This worksection does not include the installation activities of the relevant utility services.~~

1.2 CROSS REFERENCES

General

Requirement: This worksection is not a self-contained specification. In addition to the requirements of this worksection, conform to the following:

- 0136 General requirements (Construction).
- 0152 Schedule of rates (Construction).
- 0161 Quality management (Construction).
- 1101 Traffic management.

1.3 STANDARDS

General

Standards: To the relevant Road Authorities, ~~WorkCover~~ **SafeWork NSW** and utility authority's specifications.

1.4 INTERPRETATION

Abbreviations

General: For the purposes of this worksection the following abbreviations apply:

- AADT: Annual average daily traffic.
- CRO: Council's restoration officer.

- CTPO: Council's tree preservation officer.
- EMP: Environment Management Plan.
- GPR: Ground penetrating radar.
- MMDD: Maximum Modified Dry Density (modified compactive effort).
- MSDD: Maximum Standard Dry Density (standard compactive effort).
- TfNSW: Transport for NSW, formerly Roads and Maritime Services (RMS).
- QA: Quality assurance.

Definitions

General: For the purposes of this worksection, the following definitions given in the following standards apply. The text in brackets is additional to that in the standards.

- Austroads AP-C87 (2015):
 - . 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, which may be composed of fine crushed rock, natural gravel, broken stone, stabilised material, asphalt or Portland cement concrete.
 - . Carriageway: That portion of a road or bridge devoted particularly to the use of vehicles, that is between guide posts, kerbs, or barriers where these are provided, inclusive of shoulders and auxiliary lanes.
 - . Clearing: The removal of vegetation or other obstacles at or above ground prior to the commencement of earthwork, drainage, etc.
 - . Footpath/pathway: A public way reserved for the movement of pedestrians, motorised wheelchairs and personal mobility devices manually propelled vehicles.
 - . Overlay zone: The part of the trench backfill immediately over the utility service, for a maximum of 300 mm.
 - . Pavement: The portion of a road designed for the support of, and to form a running surface for, vehicular traffic (including the subbase and base course).
 - . Shoulder: The portion of formed carriageway that is adjacent to the traffic lane 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 platform.
 - . Subgrade: The trimmed or prepared portion of the formation on which the pavement is constructed. Generally taken to relate to the upper line of the formation.
 - . Wearing course/wearing surface: The part of the pavement upon which the traffic travels.
- AS 4000 (1997):
 - . Contractor: The person bound to carry out and complete work under the Contract. (A Contractor may be internal or external to the Utility Authority).
 - . Principal: 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: 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.

Other definitions: For the purposes of this worksection the following definitions apply:

- Carriageway concrete pavements: Reinforced concrete pavements. Does not include roller compacted concrete bases and subbases.
- Council: The Local Government Authority for the area where the work is carried out.
- Hold point: A mandatory verification position in the contract beyond which work cannot proceed without the designated authorisation.
- Protected species: Plants identified by Council or other relevant authorities as protected species.

- Road authority: An authority with legislated responsibility for the ownership, management and maintenance of the particular public roads on which work is proposed. For public roads within the Cessnock City Council area this will usually be either Council or Crown Lands. Note that for works within classified (State and Regional) roads, concurrence to the works details must be obtained from Transport for NSW (formerly Roads and Maritime Services) under Section 138 of the Roads Act 1993, although they are not the roads authority.
- Road reserve: The strip of public land between abutting property boundaries, specifically gazetted for the provision of public road and controlled by the definitions of the *Roads Act* (as per applicable State legislation). It includes the road carriageway, as well as footpaths, verges and landscape.
- Selected material zone: The top part of the upper zone of formation in which material of a specified higher quality is required.
- Utility authority: ~~Refer to Principal~~ A public authority with statutory responsibility for the development, operation and maintenance of a public utility (including but not limited to electricity, telecommunications or gas), and that meets the definition of the Principal (see above) in relation to the proposed works.
- Verge (rural): Defined area of the formation in rural roads outside the shoulder at the top of the batter slope.
- Verge (urban): That portion of the road formation not covered by the carriageway or footpath.
- Witness point: A nominated position, in the different stages of the Contract, where the option of attendance may be exercised by the Superintendent, after notification of the requirement.

1.5 TOLERANCES

Final carriageway restored surface tolerance

Maximum deviation from a 3 m straightedge: ± 5 mm, with no impact on traffic passing over the restored area, when checked 5 to 10 working days after completion.

Pathways and paved public areas

Lippage at patches: Match the surface level at any point along the patch's edge with the adjoining footpath surface within 5 mm.

1.6 SUBMISSIONS

Authority approvals

Requirement: Submit details of all authority approval before commencing the works for which the approval is granted, including the following:

- Road reserve: All proposed works within the road reserve (including works within the footway or nature strip) are to be submitted to the roads authority for review and negotiation. Give at least the amount of notice provided for in the Act that governs the Utility Authority's responsibilities (Federal or State).
- Trenching: Submit proof of approval for trenching by both the roads authority and the public utility authorities and/or evidence of conformity with the authority requirements.
- Existing services: Provide written confirmation from the Authority that retired services are inactive.

Location of subsurface utilities: Submit the accuracy of information of subsurface utilities and quality level: To AS 5488.1 (2022) and AS 5488.2 (2022).

Execution details

Environmental Management Plan: Submit an EMP conforming to the requirements of the relevant State authority.

Traffic management: Submit Traffic control plan for controlling vehicular and pedestrian traffic to **PROVISION FOR TRAFFIC, Traffic management.**

Tree roots: Submit proposals for an elevated platform, to protect tree dripline during compaction, to suit proposed earthworks machinery.

- Submission time: ≥ 10 working days before working near trees.

Water table: If excavation below the water table is required, submit proposals for protection of subgrade against weakening.

- Submission time: 10 working days before excavation.

Products and materials

Trench backfill: Submit details of backfill material, including source.

- Submission time: ~~5~~ 10 working days before start of backfill.

Concrete footpath and driveways including textured and patterned: If a jointing material other than bituminous fibreboard is proposed, submit details of material.

Records

QA assurance: Submit evidence of QA accreditation required by the Contract and a Quality plan for the Works.

- Submission time: 10 working days before commencement.

Work-as-executed drawings: Submit fully marked-up drawings for the whole of the Work.

- Drawings: Submit marked up and certified work-as-executed drawings for the whole of the Contract before issue of the Final Certificate.
 - . Submission time: Within 10 working days after approving completed restoration works.
- Surface utilities: Record information on background or submerged utilities to the documented quality level, conforming to AS 5488.1 (2022).

Tests

Results: Submit results of testing to **ANNEXURE – MAXIMUM LOT SIZE AND MINIMUM TEST FREQUENCIES**.

Other tests: Submit results, as follows:

- Relative compaction: Submit results of compaction tests on completed backfill within 10 working days after testing.

1.7 INSPECTIONS

Notice

General: Give notice so that inspection may be made of the following:

- ~~— Set-out of works: Set-out lines and markings before commencement of excavation and any surface clearing work.~~
- Excavation: Completed excavation to the trench/foundation level.
- Trench backfill: Bedding and overlay material installation after backfill compaction.
- ~~— Surface restoration preparation: Set-out of area for paved restoration before paving.~~
- Compaction and settlement of temporary pavement: Settlement identified and rectified.
- Temporary carriageways: Completed carriageway restoration.
- Surface restoration: Completed final surface installation of carriageway, footpath, driveway and planting, as appropriate.
- Verge, plants, shrubs and trees:
 - . Completed staking of trees and shrubs.
 - . Completed replanting of plants, shrubs and trees including replacement plants.
- Pavement markings and street furniture: Completion of reinstatement.
- Clean up: Completed restored work after cleaning.

2 PRE-CONSTRUCTION PLANNING

2.1 THE WORKS GENERALLY

Planning

Checklist: Conform to Flow diagram 1 in the Guide to codes and practices for streets opening or other State equivalent guide.

Existing utility services: Liaise and document the constraints, if any, on for excavation required by the Utility Authority.

Road opening permit: Obtain from the appropriate Roads Authority.

Authority approval

Approval by other public utility authorities: Where other public utilities exist in the vicinity **and may potentially be affected by** of the Works, conform to one of the following before starting excavation:

- Obtain approval from the relevant authority for the proposed method of excavation.
- Incorporate the requirements of the relevant utility in the proposed work methods.

Environmental control measures

Requirement: Prepare and implement an EMP including erosion and sedimentation control measures, and noise and dust control measures, as required by the relevant environmental legislation, conforming to the requirements of the relevant Statutory Authorities.

2.2 PROVISION FOR TRAFFIC**Traffic control plan (TCP)/Traffic guidance scheme (TGS)**

Requirement: Prepare a TCP showing the following, as appropriate:

- Types and locations of permanent regulatory and advisory signs.
- Types and locations of temporary signs, including advance warning signs, detour signs and speed zone signs.
- Pavement marking details, including types of delineation required, turning arrows, stop/holding lines and other road markings, types and positions of raised pavement markers and other delineation devices.
- Locations of permanent and temporary traffic signals.
- Locations and lengths of tapers and buffer zones.
- Locations of traffic controllers.
- Locations of entry and exit gates to the working areas, individually numbered and signposted.
- Pedestrians and cyclists paths including temporary footpaths and pedestrian crossing.
- Details of side roads and access for adjoining properties and parking.
- Locations of safety barriers, barrier systems and end terminals.
- Locations of temporary lighting.

Road authority delegation: Ensure that persons preparing and approving a TCP have Road Authority delegation hold TfNSW (formerly RMS) Prepare Work Zone Traffic Management Plan accreditation.

- Special consideration to the safety of the workers, pedestrians, cyclists.

Access and notification

Impact of the Works: Liaise with the affected property owners/occupants to minimise the impact of the Works on the property owners/occupants including impact on surrounding businesses and commercial areas. Include these requirements in the Traffic control plan.

Access to properties adjacent to the Works: Provide continuous safe, all weather vehicular and pedestrian access.

Notice to property owners/occupants affected by the Works: ~~48 hours before access restriction~~ at least 7 days before access restriction where required in accordance with Section 5 of the Roads Regulation 2018, and at least 48 hours in any other case.

- Emergency works: Provide notice as soon as possible after commencing such works.

Signage: Provide signs conforming to the following:

- Dimensions: 450 mm wide and 300 mm high.
- Material and form: Steel signs that are visible on all approaches.
- Text and graphics: Quoting the name of the utility, its logo, the contractor's name and an emergency phone number.
- Lettering: 40 mm high letters and numbers in arial font.

Major roads

Works on ~~classified~~ state or regional roads or traffic signals: Obtain approval of concurrence for both the Traffic control plan ~~from the State road authorities, council and police~~ and the works design details from TfNSW in addition to the roads authority. A Road Occupancy Licence will also be required for works affecting traffic on State Roads.

Local road closures

Full road closures on local roads: Obtain approval of the Traffic control plan from Council.

Emergency works: Obtain pre-approval and implement the Traffic control plan at commencement of Contract.

2.3 QUALITY ASSURANCE

Quality plan

Quality plan documents: Include all checklists, inspections, testing and documentation required in **ANNEXURE – MINIMUM TESTING FREQUENCIES** and as necessary for the Works to conform to the Contract documents.

Hold and witness points

Quality plan: Incorporate Hold and Witness Points into the checklists.

Hold Point sign-off: By the approved Contractor's representative and the Superintendent.

Notice for inspections: Conform to **INSPECTIONS**.

Notice for Council officers: Minimum 24 hours, conforming to **INSPECTIONS**.

Hold point approval by Contractor's inspector

Sign-off: If allowed by the Quality plan, the Contractor's nominated inspector may sign-off certain Hold Points. Approval will be determined by the Contractor's performance in relation to the requirements of the Quality plan and the Contract.

Testing

Frequencies: Conform to **ANNEXURE – MINIMUM TESTING FREQUENCIES**. Retest non-conforming work and rectify where necessary.

Auditing

QA documents: The Contractor's QA system may be audited as required. Provide information/documents where requested.

Costing provisions for QA

Additional costs: It is assumed all QA provisions are included in the costing for the Works and there will be no additional payment for conformance with the QA requirements.

3 EXECUTION

3.1 GENERAL

Provision for traffic

Requirement: Conform to the approved Traffic control plan.

Traffic obstruction: Construct the Works in a safe manner with the least possible obstruction to vehicular and pedestrian traffic.

3.2 EXISTING UTILITY SERVICES

Marking

Locating and marking services: Before starting earthworks, locate and mark existing underground services in the areas which will be affected by the earthworks operations including clearing, excavating and trenching.

Location of subsurface utilities: Contact BEFORE YOU DIG AUSTRALIA to identify location of underground utility services pipes and cables.

Excavation adjacent to utility services: Use only Utility Authority approved methods of excavation.

Telecommunication services: Contact the network service provider for information on underground services.

3.3 SET-OUT OF THE WORKS

Set-out

Initial limits: Set out limits of the proposed excavation for trenches, pits and chambers required for the utility service installation.

Set-out markings: Legibly mark without permanently defacing any surface.

Adjusted limits: Adjust set-out to minimise or eliminate residual small portions of paving slabs in the existing paved surfaces and joint patterns in conformance with **Pathways and driveways and Carriageways**, as appropriate.

Utility services under carriageway concrete pavement

Open trenching methods: Do not use to install utility services using open trenching method within the carriageway particularly the trafficable lanes without Roads Authority approval.

Coordination of the Works with utility services installation: Coordinate with trenchless conduit installation requirements or the relevant Utility Authority's specification.

Maintenance: If maintenance of the Utility Authority's services requires the use of open trenching methods in the carriageway pavements, obtain approval before proceeding.

Restoration work: Conform to **FINAL RESTORATION OF CARRIAGEWAY** or the relevant road authority's requirements.

Pathways and driveways

Set-out: Adjust set-out lines in conformance with the

Guide to codes and practices for streets opening (2018) and the following:

- Bitumen and concrete paving: Conform to the reinstatement requirements of the Guide to codes and practices for streets opening (2018).
- Segmental paving units: Set-out line at least one whole unit clear of both sides of the minimal alignment of the trench.
- Textured or patterned concrete: Obtain directions for set-out line.
- Driveways: Where driveways are not to be disturbed and utility services are to be installed, coordinate with trenchless conduit installation requirements. If trenchless installation methods are not practicable, locate and obtain approval for the set-out line to allow an aesthetically acceptable restoration of the pavement.

Carriageways

Trenches in asphalt pavements: Set-out at the minimum width for the depth of service and, wherever possible, at right angles to the road reserve boundary.

Survey marks: For trench or surface work in the vicinity of Permanent or State Survey Marks, obtain **and conform to** protection or relocation requirements from the ~~Land Information Centre of the State Authority responsible for survey records~~ **Surveyor General of NSW** before commencement of Work.

Concrete pavements: Obtain direction and approval from the appropriate road authority for the location of trench set-out lines.

3.4 WASTE DISPOSAL AND RECYCLING

Waste management

Waste/spoil material: Legally dispose to an appropriate recycling facility, disposal site or a legal waste management centre.

3.5 SURFACE TREATMENT REMOVAL

Concrete and asphalt pavements

Sawcutting: Sawcut trench set-out lines of concrete or asphalt footpaths and asphalt footpath/carriageway pavements for the full depth of the bound pavement layer, except where set-out line is located along expansion joints. For rigid pavements double cut the pavement 100 mm apart to protect the adjoining concrete pavements from damage during demolition activities.

Concrete and asphalt removal: Break out concrete or asphalt footpath and carriageway pavement material between the trench set-out lines, remove and legally dispose off-site conforming to the EMP.

Segmental paving units and dimension stones

Paving units removal: Take up full and cut paving units, between trench set-out lines, by hand and neatly stack on wooden pallets for re-use. Obtain agreement for storage locations.

Dimension kerb and gutter units removal: Take up units located between trench set-out lines and store as for paving units.

Concrete edging: Break out, remove and legally dispose off-site.

Concrete subbase: If present, sawcut along the trench set-out lines.

Decorative pavers laid on mortar bed

Decorative pavers laid on mortar bed and concrete base: If services installation is required, do not disturb except where trenchless conduit installation is impractical.

Pavement removal: If disturbing these surfaces is required, remove pavers for re-use, stack and secure against theft or damage. Remove mortar bedding mix.

Sawcutting: Do not sawcut pavers. If required, provide evidence that replacement pavers, of the same type, size, colour and decoration, are available.

Concrete subbase removal: Sawcut along the trench set-out lines and remove. If percussion equipment is required for removal, make sure adjacent areas of paving are not disturbed.

Grass

Removal method: Neatly cut turf between trench set-out lines into 300 mm squares and stockpile for re-use or dispose off-site if unsuitable for re-use.

Stockpiling for re-use: Obtain agreement for storage locations. Water grass as required for replanting during the storage period.

Grass unsuitable for re-use: Replace with grass turf of the same species.

Small plants, shrubs and trees

Plants required for replanting: Identify and confirm with the CTPO plants suitable for replanting between set-out lines. Take up heritage listed/protected plants and plants confirmed suitable for replanting for storage.

Storage: Wrap rootball in a hessian or plastic bag with drain holes and water as required during the storage period.

Plants unsuitable for replanting: Remove and dispose off-site.

House stormwater pipes

Pipes discharging into carriageway gutters: Maintain operational at all times.

Pipes damaged by the Works: Repair or replace pipes, including house supply pipes, to match existing. Provide watertight seals to all joints and connections.

Street furniture

Furniture likely to interfere with or be damaged by the Works: Remove and store furniture, including signage, seats and litter bins. Obtain direction for storage location.

3.6 EXCAVATION

Topsoil

Topsoil suitable for re-use: Strip, remove and stockpile. Obtain direction for stockpile location. If on-site stockpiling is impracticable, stockpile the topsoil off-site or legally dispose off-site.

Removal timing: Before trench excavation.

Trenching

Dimensions: Excavate trenches to the standard widths and depths for the particular utility service installation or as documented.

Stabilisation of sides: Provide shoring, sheet piling or other necessary measures in conformance with statutory requirements.

Approval by utility/service provider: If public utilities exist in the vicinity of the Works, obtain approval from the authority relevant to the method of excavation before starting excavation.

Excavation level: Excavate trench or foundation to the planned bedding or foundation bottom level.

Existing services

Existing underground services: Conform to **EXISTING UTILITY SERVICES** in *0136 General requirements (Construction)* and *Work near underground assets - Guide (2007)* from Safework NSW. Locate by exploratory excavation or by ground penetrating radar (GPR) before principal trench excavation.

Disused, retired or abandoned services: Before removal, provide written confirmation from the appropriate Authority that services are inactive.

Removal of retired services: Excavate, remove all components and legally dispose off-site. Backfill the excavation in conformance with **TRENCH BACKFILL**.

Excavated material stockpiles

Excavated material: Segregate earth and rock material and stockpile for re-use in backfilling operations. Obtain approval for stockpile locations.

Stockpile locations: Obtain direction for stockpile locations. Do not stockpile against tree trunks, buildings, fences or obstruct the free flow of water along gutters where stockpiling is permitted along the line of the trench excavation.

If stockpiling is not permitted: Dispose legally off-site.

Unsuitable material

Disposal: Remove any material from the bottom of the trench or at foundation level which is deemed unsuitable, legally dispose off-site and replace with backfill material in conformance with **TRENCH BACKFILL**.

Bottom of excavated trench/foundation level: Align with the slope of the utility service after unsuitable material has been removed and replaced.

Contaminated or hazardous material

Contaminated excavated material: If encountered, provide notification and dispose of the material to the requirements of the relevant Statutory Authority.

3.7 EXISTING TREES**Protection during works**

Existing trees: Existing trees are legally protected by Council's Tree Preservation Order. Protect from damage during the Works.

Bulk and harmful materials: Do not store, stockpile, dump or otherwise place under or near trees materials such as oil, waste concrete, clearings and boulders. Prevent wind blown materials from harming trees and plants.

Work near trees

Damage: Prevent damage to tree bark. Do not attach stays and guys to trees.

Topsoil: Do not remove topsoil within the dripline of the trees.

Excavating within driplines: If required, use hand or trenchless methods so that root systems remain intact and undamaged.

Duration of open excavations under tree canopies: Obtain direction from the CTPO.

Tree roots

Cutting roots: If cutting roots more than 50 mm diameter, obtain approval from the CTPO before proceeding. Cut using methods that do not unduly disturb the remaining root system. Immediately after cutting, water the tree and apply a liquid rooting hormone to stimulate the growth of new roots.

Compacted ground: Do not compact the ground or use skid-steel vehicles under the tree driplines.

Compaction protection: Protect areas adjacent to the tree dripline.

Watering trees: Water as necessary, including where roots are exposed at ambient temperatures higher than 35°C.

Mulching: Spread 100 mm thick organic mulch to the whole area covered by the driplines of protected trees.

3.8 TRENCH BACKFILL**Bedding, haunch, side and overlay zones**

Materials and installation: Conform to the Utility Authority's requirements.

Side zone and overlay material: Install as required for the utility service being installed. Make sure material performance conforms to **TRENCH BACKFILL** and **COMPACTION**.

Geotextile: Install a geotextile sheet on any coarse overlay material to prevent piping of fines.

Backfill

Extent: Between the overlay zone and the top of subgrade.

Material: Backfill with one of the following:

- 14:1 moist washed river sand/cement mix or non-cohesive backfill material.
- Stockpiled excavated material.
- Imported fill: If trench backfill material has been disposed off-site, use imported material free of stumps or roots, and capable of being compacted to **COMPACTION**.

Water table

Seepage zones: If sand/cement backfill is used, make sure natural seepage zones are not cut off by the impervious sand/cement material. Provide a pervious drainage layer or suitable subsoil drainage to maintain natural seepage.

Water in pervious material: If sand, crushed rock or similar pervious materials are used for trench backfill and bedding in a clay subgrade, make sure seepage water is not trapped in the pervious material, so that it saturates the adjacent clay subgrade and weakens it. If this occurs, install subsoil

drainage for the bedding and backfill, or provide an impervious layer of material between any possible sources of seepage and the pervious backfill material.

Excavation below the natural water table: If required and the permanent exclusion of water from subgrade is not possible, submit proposals to protect the subgrade against weakening or obtain directions vary the excavation requirements.

Selected material zone below subbase level

Excavation through a selected material zone: If required, backfill within the selected material zone using materials conforming to the following:

- Free from stones larger than 100 mm maximum dimension.
- The fraction passing a 19 mm Australian Standard sieve with a 4 day soaked CBR value not less than that of the adjacent selected material zone, tested to AS 1289.6.1.2 (1998). *As an alternative to testing, an engineered pavement design may be specified on the Drawings and approved by Council's engineer.*

Verge and landscape areas

Backfill material: Material passing through a 75 mm sieve, not containing any organic or deleterious material or reactive clay.

Landscaped areas: Place topsoil on the subgrade to the same thickness as the surrounding topsoil.

Backfilling at/near trees

Backfill at trees: Backfill 300 mm minimum thickness around tree roots with a topsoil mixture. Place and compact in layers of 150 mm maximum depth, to a dry density equal to that of the surrounding soil.

Backfill level: Do not place backfill material above the original ground surface around tree trunks or over the root zone.

Backfill material: A 3:1 topsoil:well-rotted compost mixture, free from weed growth and harmful materials, and with a neutral pH value.

Watering: Thoroughly water the tree root zone immediately after backfilling.

Under footpaths, carriageways and heavy duty driveways

Extent: To the subgrade level.

Backfill material: Use one of the following:

- Sand: Do not use if the bedding/overlay is coarse aggregate.
- Fine crushed rock/recycled concrete: Conform to **Crushed rock and recycled crushed concrete**.
- Selected backfill material with an equivalent 4 day soaked CBR value to AS 1289.6.1.2 (1998), maximum particle size of 75 mm, and does not contain organic or deleterious material or reactive clay.
- Under footpaths: 25:1 sand/cement mix, not requiring compaction testing.
- Under carriageways: 14:1 sand/cement mix, not requiring compaction testing.

Crushed rock

Designation: Unbound crushed rock materials are designated as follows:

- CRB20-1: 20 mm nominal sized class 1 crushed rock base.
- CRB20-2: 20 mm nominal sized class 2 crushed rock base.
- CRS20: 20 mm nominal sized crushed rock subbase.
- CRS40: 40 mm nominal sized crushed rock subbase.

Recycled Crushed concrete

Designation: Recycled crushed concrete materials are designated as follows:

- CCB20-1: 20 mm nominal sized class 1 recycled crushed concrete base.
- CCB20-2: 20 mm nominal sized class 2 recycled crushed concrete base.
- CCS20: 20 mm nominal sized recycled crushed concrete subbase.

Guidance: in specifying or working with this material, consider using the notation CCB20(n), where n is the percentage of non-concrete based material contained within the mix. This may reduce potential cracking of CCB containing all concrete material (particularly that sourced from the demolition of structural grade concrete). Refer to local/State guidelines on the use of recycled materials

3.9 COMPACTION

Relative compaction

Sand/cement backfill material: No compaction testing is required.

Layers: Compact all material in maximum 150 mm compacted thick layers, ~~unless it can be demonstrated that the required compaction can be achieved with thicker layers.~~

Moisture content: During compaction, adjust the moisture content of the material to attain the required compaction at a moisture content 60% to 95% of the apparent optimum moisture content, to AS 1289.5.7.1 (2006) (modified compaction).

Compacting adjacent to utility services: Use compaction methods which will not damage or cause misalignment of underlying or adjacent utility services and adjacent structures.

Compacting asphalt

Requirement: Compact as soon as practicable after spreading new material, in a continuous operation conforming to the following:

- Uniformly compact each layer before starting the next layer.
- Compact the full depth of material over the entire area of placement.

Compaction table

Zone	Relative compaction	Density index (for non-cohesive materials)	Moisture content (% of optimum moisture content)
Bedding and overlay zones	To the utility authority's specification	To the utility authority's specification	To the utility authority's specification
Backfill in verge and landscape areas	90% standard	70	60% to 100%
Backfill to subgrade level under footpaths and carriageways	98% standard 95% modified	80	60% to 100%

3.10 TESTING

General

Requirement: Test for all characteristics in conformance with ANNEXURE - **MAXIMUM LOT SIZES AND MINIMUM TEST FREQUENCIES.**

Quality verification: If material/product quality verification can be obtained from the supplier, documented tests need not be repeated.

3.11 SURFACE RESTORATION PREPARATION

Carriageway pavements and pathways

Rectification: Restore so that pavement/pathway is continuous and the condition is equivalent to that at start of Works.

Safety: Make sure all temporary and final restorations in carriageways and pathways is of the quality required maintain site safety for pedestrians and vehicular traffic.

Structures and surface pits

Levels: Set the levels of utility service surface pits, access chamber frames and lids and other affected structures, so that carriageway pavements and footpaths can be restored to the original levels. If utility service surface box requires adjustment or replacement before restoration, liaise with the Utility Authorities.

Restoration approval

Before paving restoration work: Form up and prepare the areas to be restored and present the prepared areas for approval **if required at 1.6 INSPECTIONS.**

Requirements: Conform to **ANNEXURE – Typical final restoration in footpath table.**

Temporary carriageways

Subbase and base: After backfilling to the subgrade level, install subbase and base material in conformance with **FINAL CARRIAGEWAY RESTORATION.**

Temporary restoration: Temporarily restore carriageway if reopening to traffic before final restoration. Maintain temporary restoration in a safe condition until the final restoration is completed.

Temporary restoration method: Restore carriageway using one of the following:

- Bituminous cold mix: 40 to 50 mm thick, on the final subbase and base material with the following mix performance properties:
 - . Cohesiveness of manufactured material: Cohesive and capable of being compacted readily into a semi-dense mass which is resistant to the destructive action of traffic.
 - . Interlock: When compacted, visual examination of the compacted material indicates good mechanical interlock of particles which are fully coated with binder.
 - . Mix sampling: To AS/NZS 2891.1.1 (2013) or AS 2891.1.2 (2023).
- Steel plating: Over trench, of sufficient thickness and bearing area outside the trench to support traffic loadings, and suitably secured with pins and bituminous cold mix.

Advance warning signs: If using steel plating, provide signs in conformance with AS 1742.3 (2019).

Temporary footpaths and driveways

Subbase and base: After backfilling to the subgrade level, install subbase and base material in conformance with **FINAL PATHWAYS AND DRIVEWAYS RESTORATION**.

Temporary restoration: Temporarily restore footpath or driveway if reopening to pedestrian traffic before final restoration. Maintain temporary restoration in a safe condition until the final restoration is completed.

Pedestrian and vehicular access: Liaise with property owners and make sure access is provided to all properties at the end of each day's work.

Temporary restoration method: Restore footpath/driveway using one of the following:

- Bituminous cold mix: 20 to 40 mm thick, with the following mix performance properties:
 - . Cohesiveness of manufactured material: Cohesive and capable of being compacted readily into a semi-dense mass which is resistant to the destructive action of traffic.
 - . Interlock: When compacted, visual examination of the compacted material indicates good mechanical interlock of particles which are fully coated with binder.
 - . Mix sampling: To AS/NZS 2891.1.1 (2013) or AS 2891.1.2 (2023).
- Sheeting or steel plating: Over trench of sufficient thickness and bearing area outside the trench to support traffic loadings, and suitably secured with pins and bituminous cold mix.

Connection with adjoining footpath:

- Bituminous cold mix: Smooth and evenly graded so that the temporary restoration is not a trip hazard for pedestrians.
- Sheeting or steel plating: Match the steel plating level to the adjacent bituminous cold mix surface and make sure steel plating is not a trip hazard for pedestrians.

Compaction and settlement of temporary pavement

Compaction: Uniformly compact each layer of the base and subbase within the trench to a relative compaction of 98% to AS 1289.5.2.1 (2017), or 102% to AS 1289.5.1.1 (2017).

Compaction method: Use methods which will not damage or cause misalignment of underlying and adjacent utility services or structures.

Settlement: If temporary restoration show signs of settlement, do not start final restoration until the cause of the settlement has been identified and rectified to approval.

Temporary pavement removal

Temporary pavement material: Remove and dispose off-site before final carriageway and pathway pavement restoration.

Temporary base material: If approved, the temporary base material may remain in place and be incorporated into the final pavement if it conforms to the following:

- The requirements of this worksection for the subbase (including the requirements for compaction and testing).
- Has not been disturbed or contaminated during removal of the temporary surfacing.

3.12 FINAL CARRIAGEWAY RESTORATION

General

Timing: Carry out final restoration as soon as practicable and within the contract required time.

Subbase/base layers and depths: Match the existing pavement.

- Cement stabilised crushed rock or a lean mix concrete subbase: Materials and layer depths to match the existing pavement.

Flexible pavements generally

Tack coat for asphalt or seal coat for sprayed bituminous seals: Present a waterproof surface at application.

Asphaltic limits: Conform to the following:

- Existing wearing course removal: Remove between 100 to 400 mm, in plan, beyond the perimeter of any trench excavation. Dispose removed materials off-site.
- Asphalt placed as restoration: Extend 100 to 400 mm minimum, in plan, beyond the perimeter of any trench excavation.

Joints between new and existing asphalt: Conform to the following:

- Joint: Vertical and cut by diamond saw or milling machine.
- Vertical face and subgrade surface of old asphalt: Treat by bituminous tack coating.
- Defects: Seal any joints between the existing and new asphalt during the defects maintenance period with an approved joint sealant.

Asphaltic concrete wearing surfaces

Material and installation: Conform to the Road Authority's requirements for the restoration of asphaltic concrete roads.

Bituminous spray seal surfaces

Material and installation: Restore surface to match existing surfaces.

Thickness and aggregate size: Match the existing pavement.

Pavement with asphaltic concrete underlay: Restore the pavement in asphaltic concrete matching the total thickness of the existing pavement.

Small openings in pavement: Restore using asphaltic concrete (AS20) with minimum thickness of 50 mm to the match existing pavement.

Concrete carriageways

Concrete carriageways: Conform to the Road Authority's requirements for restoration of concrete roads.

Bond Breaker: Install a bond breaker at the interface of the concrete base and cementitious sub-base:

- To prevent bonding of trench backfill to the concrete base course.
- Assist in the management of cracking.
- Reduce the risk of utility service damage when the concrete base is excavated in the future.

Set Accelerators: Provide set accelerators where the Roads Authority requires the concrete road to be back in service within a specific time frame.

- Do not use Calcium Chloride admixture or other acid concrete admixtures that significantly reduce the life of steel reinforced concrete pavements.
- Use other set accelerators which are not acidic with additional skilled resources to lay, compact and finish the surface prior to the set of the concrete

Slab size and shape requirement: Conform to the following:

- Restore full slab to achieve the same slab integrity that previously existed prior to the utility works
- Restore full trafficable lane width.
- Minimum slab replacement size: Trafficable lane width x 3.5 metres long.
- Allow for existing cracks and joints and maintain the slab lengths of 3.5 metres. Make sure that the restoration does not create slab lengths less than 3.5 metres in adjoining slabs.

Jointing and crack control: Carry out joint and crack control design to ensure that joints and cracks from adjoining slabs will not induce cracking of the restored slab and vice versa.

Pavement markings

Markings: Reinstate to match existing markings.

3.13 FINAL PATHWAYS AND DRIVEWAYS RESTORATION

General

Timing: Carry out final restoration as soon as practicable and within the time required in the Contract.

Matching finishes: Restore pathways, and other public areas, with materials consistent with the existing surface before commencement of the Works.

Surface levels: Match the levels existing before the surface was disturbed. Provide smooth junctions with the adjacent existing surfaces, covers and features.

Pavement markings and street furniture

Pavement markings: Reinstate to match existing markings.

Street furniture: Remove and store street furniture. Obtain directions for storage location. Reinstate at locations matching the original location.

Subbase and base generally

Material: Provide crushed rock, CRB20-2 or CRS20 material, configured in layers and depths conforming to **ANNEXURE – Typical final restoration in footpath table**.

Compaction: Uniformly compact each layer of the subbase and base courses over the full area and depth within the trench to **COMPACTION** and **ANNEXURE - Typical final restoration in footpath carriageway or heavy duty driveway table**.

Compaction testing: Conform to **TESTING, QUALITY ASSURANCE** and the Contractor's approved Quality plan.

Compaction method: Use methods which will not damage or cause misalignment of underlying and adjacent utilities and services.

Flexible subbase

Material: Fine crushed rock or recycled concrete conforming to **TRENCH BACKFILL, Crushed rock and recycled concrete**.

Thickness: Match the existing subbase, conforming to the following:

- Footpath and light duty driveways: Minimum 50 mm.
- Medium and heavy duty driveways: Minimum 150 mm.

Compaction: To **COMPACTION** and **ANNEXURE - Typical final restoration in footpath table**.

Rigid base

Concrete base: Reinstate using 20 MPa concrete, match the thickness of the existing base.

Concrete footpaths and driveways including textured and patterned

Minimum width of restorations: Conform to the *Guide to codes and practices for streets opening (2018)* clause 7.7.

Surface finish and pattern: To match adjoining footpaths and driveways.

Concrete footpaths: Using 20 MPa minimum concrete, construct footpath to the same thickness as the adjoining footpaths, 75 mm minimum.

Light duty driveways: Construct light duty driveways serving single residential dwellings as follows:

- Concrete: 25 MPa.
- Driveway thickness: Same thickness as the original driveway, 100 mm minimum.
- Reinforcing: If the existing driveway contains reinforcing, provide F62 steel mesh with 40 mm top cover.

Medium/heavy duty driveways: Construct medium duty driveways serving multiple residential dwellings and light commercial developments, and heavy duty driveways as follows:

- Concrete: 25 MPa.
- Driveway thickness: Same thickness as the original driveway, 150 mm minimum.
- Reinforcing: F72 steel mesh with 50 mm top cover.

Expansion joints: 15 mm thick preformed bituminous fibreboard jointing material, placed in line with joints in existing concrete, and extend to the full width transverse joints with existing concrete.

Control joints: Form in line with the control joints in the existing concrete.

Around electricity supply poles: Terminate the concrete paving 200 mm from the pole and fill resulting space with cold mix asphalt.

Asphalt footpaths

Materials and installation: To match existing footpath/driveway.

Thickness: Match the adjoining footpath.

Finish: Compact to a smooth even surface.

Segmental pavers on sand bed

Materials and installation: To match existing footpath/driveway and the following:

- Existing pavement units: Take up and store until required for laying.
- Laying: Re-lay to match the pattern and surface levels of the existing paving.
- Damaged paving units unsuitable for re-laying: Replace with new units of the same material, type, size and colour as the existing.

Paving around trees, service boxes and poles: Match the paving pattern at similar existing features in the immediate area.

Decorative segmental paving on concrete base

Application: The restoration of pathways or driveways with natural stone, concrete or masonry paver surface or other surface products laid on a mortar bed and concrete base.

Concrete base: Reconstruct the concrete base as follows:

- Concrete: 25 MPa.
- Driveway thickness: To match the existing concrete.
- Reinforcing: If the concrete base is reinforced, tie reinforcement to the existing reinforcing, 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.
- Tie bars: 600 mm long N12 reinforcing bars, installed at 1000 mm centres by drilling 200 mm deep 16 mm diameter holes at mid-slab depth and grouting tie bars into holes using a 1:1 cement/sand mix.
- Unreinforced concrete base: Roughen the sawn face to allow formation of a keyed joint.

Transverse or longitudinal joints: If disturbed by the Works, reinstate to match existing joints.

Damaged or sawcut pavers: Remove pavers adjacent to the trench damaged during the Works.

Remove sawcut pavers back to the nearest existing joint.

Mortar bed material and thickness: Match the existing mortar bed.

Existing pavers: If re-laying is required, replace cut or damaged pavers with new pavers of the same material, type, size, colour and decoration as the existing pavers. Liaise with the Council for supply details of pavers. If existing pavers cannot be sourced, provide an alternative in consultation with the Council.

Laying: Match existing surface levels, jointing pattern, gap width and infill material.

Turfed verges

Stockpiled topsoil: 50 mm minimum thickness. Place on the subgrade before restoring turfed verges.

Existing grass turf: Take up and store until required for laying. Re-lay in conformance with the original grassed surface.

Turfing: Hard butt turfs against each other in rows and top-dress the seams with topsoil. Roll and water turf, make sure there is direct and uniform contact with the topsoil.

Additional turf: If required, complete the affected area using turf of the same species as the existing grass.

Verge plants, shrubs and trees

Stockpiled topsoil: Place on the subgrade, to the same thickness as the surrounding topsoil, before replanting.

Planting holes: Excavate at locations matching the original locations and spread the topsoil material evenly around each hole.

Existing plants, shrubs and trees: If suitable for replanting, replant in prepared holes. Backfill the planting hole with topsoil and compact by foot up to surface level.

Plants unsuitable for replanting: Replace with plants of the same species and size, or as agreed with the CTPO or other appropriately authorised Council Officer.

Backfilling planting hole: Backfill with topsoil and compact by foot to the surface level.

Staking and watering: Stake, water and maintain root moisture as required for re-establishment.

Shrubs and trees which fails to re-establish: Replace with plants of the same species and size.

3.14 COMPLETION

Clean up

Requirement: Upon completion of all restoration works, clean up the areas affected by the Works and associated construction activities, and restore to condition existing before commencement of the Works.

Waste: Remove and legally dispose of all formwork, waste and residue construction materials off-site including material left at stockpiles.

Surfaces stained by construction activities: Clean and restore to approval.

4 ANNEXURE A

4.1 ANNEXURE – TYPICAL FINAL RESTORATION

Typical final restoration in footpath table

Zone	Zone thickness	Material	Compaction requirement
Wearing surface (course)	Concrete: 75 mm minimum. Asphalt: To match existing. Segmental paving on sand bed: To match existing. Segmental decorative paving on concrete base: To match existing.	To FINAL PATHWAYS AND DRIVEWAYS RESTORATION.	To COMPACTION, Compacting asphalt.
Subbase/ base course	Match existing thickness (minimum 50 mm). Segmental decorative paving on concrete base – subbase only required if existing.	To FINAL PATHWAYS AND DRIVEWAYS RESTORATION.	92% MMDD or 95% MSDD.
Subgrade	Varies.	To TRENCH BACKFILL.	90% MSDD or Density Index 70%.
Bedding zone	To the Utility Authority's specification.	To the Utility Authority's specification.	To the Utility Authority's specification.

Typical final restoration in carriageway or heavy duty driveway table

Zone	Zone thickness	Material	Compaction requirement
Base course	Match existing.	To FINAL CARRIAGEWAY RESTORATION.	98% MMDD or 102% MSDD.
Subbase course	Match existing.	To FINAL RESTORATION OF CARRIAGEWAY SUBBASE AND BASE (FLEXIBLE).	
Subgrade	Varies.	To TRENCH BACKFILL.	98% MSDD or 95% MMDD or Density Index 80.
Bedding zone	To the Utility Authority's specification.	To the Utility Authority's specification.	To the Utility Authority's specification.

4.2 ANNEXURE – SUMMARY OF HOLD AND WITNESS POINTS

Certain Hold and Witness Points where specifically noted below require representatives of both the Superintendent and the Roads Authority (e.g. Council) to authorise release.

Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held**
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Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held**
SUBMISSIONS, Execution details Environmental management plan	H	EMP conforming to State authority requirements.	10 days before commencement on site	Commencement
SUBMISSIONS, Execution details Traffic management	H	Traffic control plan for controlling vehicles and pedestrians.	10 days before commencement on site	Commencement
SUBMISSIONS, Authority approvals Trenching	H	Approval for trenching from the roads authority and the public utilities authorities.	10 days before excavation commencement on site	Excavation Commencement
SUBMISSIONS, Authority approvals Existing services	H	Confirmation retired services are inactive.	10 days before excavation	Excavation
SUBMISSIONS, Authority approvals	H	Location of subsurface utilities	10 days before commencement	Excavation
INSPECTIONS, Notice Set-out of works	H	Set-out of lines and markings before excavation and clearing.	5 days before start of work	Excavation and surface clearing work
INSPECTIONS, Notice Excavation	H – Superintendent W – Roads Authority	Completed excavation to the trench/foundation level.	5 days before backfilling	Backfilling
INSPECTIONS, Notice Trench backfill	H – Superintendent W – Roads Authority	Completed bedding and overlay material installation after compaction.	5 days before completing backfill	Surface restoration preparation
INSPECTIONS, Notice - Surface restoration preparation	H	Prepared area to be restored, including set-out.	5 days before paving	Paving
INSPECTIONS, Notice Compaction and settlement of temporary pavement	H	Rectified settlement of temporary pavement.	3 days before final restoration	Completion of temporary pavement
INSPECTIONS, Notice Temporary carriageways	W	Completed temporary carriageway.	3 days before completion of works	-

Clause and description	Type	Submission/Inspection details	Submission/Notice times	Process held**
INSPECTIONS, Notice Surface restoration	W – Superintendent and Roads Authority	Final surface installation.	3 days before Upon completion of works	-
INSPECTIONS, Notice Verge, plants and shrubs	W	Staking of trees and shrubs.	3 days before completion of works	-
INSPECTIONS, Notice Verge, plants and shrubs	W – Superintendent and Roads Authority	Replanted plants, shrubs and trees.	3 days before Upon completion of works	-
INSPECTIONS, Notice Pavement markings and street furniture	W – Superintendent and Roads Authority	Reinstated pavement markings and street furniture.	3 days before Upon completion of works	-
INSPECTIONS, Notice Clean up	W – Superintendent and Roads Authority	Restored work after cleaning.	3 days before Upon completion of works	-
Notes: H = Hold Point, W = Witness Point **Hold or Witness Point release by the Superintendent administering the Contract, and where noted in this table, approval from the CRO (on behalf of the roads authority) is to also be coordinated by the Superintendent.				

4.3 ANNEXURE – MINIMUM TESTING FREQUENCIES

Activity	Key quality verification requirements	Minimum test frequency	Test method
Trench backfill under carriageways and footpaths, materials supply	Material properties as documented.	1/contract or source of supply for each type of material used or suppliers test certificates. Minimum 1/500 m ³ .	As documented.
Trench backfill under carriageways and footpaths, placement	Compaction	1/2 layers/100 linear metres of trench or per 20 road openings for openings of less than 10 m ² plan area whichever results in the most frequent testing.	AS 1289.5.1.1 (2017) for MSDD AS 1289.5.2.1 (2017) for MMDD AS 1289.5.6.1 (1998) for non-cohesive materials
	Moisture content during compaction	1/2 layers/100 linear metres of trench or 20 road openings of less than 10 m ² plan area	AS 1289.5.7.1 (2006)
Subbase and base materials supply	Material properties as documented.	Suppliers' test certificates.	As documented.
Subbase and base placement	Compaction	1/pavement layer/100 linear metres of trench or 20 road openings for openings of less than 10 m ² plan area, whichever	AS 1289.5.1.1 (2017) AS 1289.5.2.1 (2017)

Activity	Key quality verification requirements	Minimum test frequency	Test method
		results in the most frequent testing.	
Temporary carriageways, footpaths or driveways – bituminous cold mix	Grading	1 per contract (sampling by production lot)	AS 1141.11.1 (2020)
	Binder	1 per contract (sampling by production lot)	AS/NZS 2891.3.1 (2013)
Wearing surface materials	Material properties as documented.	Suppliers' test certificates.	As documented.
Wearing surface placement	Testing as documented.	Conform to FINAL CARRIAGEWAY RESTORATION for checking evenness of the restored surface	As documented.

4.4 ANNEXURE – PAY ITEMS

Use of this schedule is optional, at the Superintendent's discretion.

Pay items	Unit of measurement	Schedule rate inclusions
1152.1 Traffic control	Lump sum item.	Provision for traffic, both vehicular and pedestrian the provision of: Traffic controllers, signposting, roadmarkings, raised pavement markers, lights, barriers. Other traffic control devices required for the safe movement of traffic and the protection of persons and property.
1152.2 Control of erosion and sedimentation	Lump sum item.	All costs associated with sedimentation and erosion control measures.
1152.3 Sawcut existing pavement/footpath - 1152.3(1) Bituminous carriageway pavement - 1152.3(2) Bituminous footpath - 1152.3(3) Concrete footpath, including textured or patterned concrete.	Linear metre measured along the actual line of cut.	Give separate rates for sawcuts in each type of material. All costs associated with sawcutting operations including plant hire and water provision.
1152.4 Remove existing pavement/footpath	m ² of pavement removed. Width and length as documented.	This includes bituminous and concrete material and concrete base from segmental paving where applicable. All costs associated with breaking out, removing, transporting off-site, disposal and any applicable tipping fees.
1152.5 Segmental pavers (including decorative segmental pavers) - 1152.5(1) Take up and stack existing pavers – Carriageway	m ² of surface of segmental pavers (or decorative segmental pavers) taken up or laid. Width and length as documented.	Give separate rates for taking up existing, laying existing and supplying and laying new pavers for carriageways or footpaths as appropriate. For items 1152.5(1) and 1152.5(2) , all costs associated with taking up and stacking pavers on pallets at agreed locations. Remove

Pay items	Unit of measurement	Schedule rate inclusions
<ul style="list-style-type: none"> - 1152.5(2) Take up and stack existing pavers – Footpath - 1152.5(3) Lay existing pavers – Carriageway - 1152.5(4) Lay existing pavers – Footpath - 1152.5(5) Supply and lay new pavers – Carriageway - 1152.5(6) Supply and lay new pavers – Footpath 		<p>concrete base, where applicable, under Pay item 1152.4.</p> <p>For items 1152.5(3) and 1152.5(4), all costs associated with 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.</p> <p>For items 1152.5(5) and 1152.5(6), all costs associated with 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.</p>
1152.6 Remove existing edge strips	Linear metre measured along the length of the edge strip.	All costs associated with breaking out, removing, transporting off-site, disposal and any tipping fees applicable.
1152.7 Grass turf <ul style="list-style-type: none"> - 1152.7(1) Take up and store existing turf. - 1152.7(2) Lay existing turf. - 1152.7(3) Supply and lay new turf. 	m ² of surface of grass turf taken up or laid. Width and length as documented.	<p>Give separate rates for taking up existing, laying existing and supply and lay new turf.</p> <p>For item 1152.7(1), all costs associated with cutting, taking up and storing turf.</p> <p>Grass unsuitable for reuse to be removed under Pay Item 1152.7(2).</p> <p>For item 1152.7(2), all costs associated with the topsoil bedding, rolling, laying of existing turf and topdressing.</p> <p>For item 1152.7(3), all costs associated with the topsoil bedding, rolling, supply and laying of new turf and topdressing.</p>
1152.8 Verge plants, shrubs and trees <ul style="list-style-type: none"> - 1152.8(1) Take up and store existing. - 1152.8(2) Plant existing. - 1152.8(3) Plant new. - 1152.8(4) Disposal of unsuitable. 	Each plant, shrub or tree taken up or planted (excludes Pay Item 1152.6(4)).	<p>Give separate rates for taking up existing, replanting existing and supply and plant new plants, shrubs or trees.</p> <p>For item 1152.8(1), all costs associated with taking up, storing and watering.</p> <p>For item 1152.8(2), all costs associated with topsoil placement, preparatory work, planting, staking and subsequent care of each plant.</p> <p>For item 1152.8(3) all costs associated with topsoil placement, preparatory work, supply and planting, staking and subsequent care of each new plant.</p> <p>For Pay item 1152.8(4) the cubic metre of unsuitable plants, shrubs and trees.</p> <p>For item 1152.8(4) all costs associated with transporting off-site, disposal and any tipping fees applicable.</p>
1152.9 Stockpiling of topsoil	m ³ as bank volume calculated from the width and length documented, by the depth of topsoil.	<p>All costs associated with stripping topsoil, carting and placing into stockpile.</p> <p>For topsoil to be disposed off-site, apply Pay item 1152.10(2).</p>

Pay items	Unit of measurement	Schedule rate inclusions
1152.10 Trench excavation - 1152.10(1) To stockpile - 1152.10(2) Disposal off-site (including unsuitable material)	m ³ as bank volume of excavation calculated as follows: Width – as required for the particular utility service installation. Depth – average actual depth from topsoil stripped ground surface to underside of the required bedding. Length – actual excavation length, centre to centre of pits.	Give separate rates for excavation to stockpile and off-site disposal. The schedule rate is an average rate to covering all types of material encountered during excavation. Do not include separate rates for earth and rock. All costs 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. For item 1152.10(1) , all costs associated with carting and placing into stockpile. For item 1152.10(2) , all costs associated with transporting off-site, disposal and any tipping fees applicable.
1152.11 Trench backfill - 1152.11(1) From stockpiled material. - 1152.11(2) From imported material. - 1152.11(3) 25:1 sand/cement mix. - 1152.11(4) 14:1 sand/cement mix.	m ³ measured as backfill compacted volume in place in the trench calculated 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.	All costs associated with backfilling (including supply and installation of geotextile where appropriate), compaction, testing and treatment around tree roots. For item 1152.11(1) , all costs associated with loading and carting from stockpile. For items 1152.11(2) , 1152.11(3) and 1153.11(4) all costs associated with supply and delivery of imported material, including material for a selected material zone where documented.
1152.12 Temporary pavement - Carriageway and footpath	m ² of trench area restored with temporary pavement calculated by multiplying the trench width by the actual length of temporarily restored pavement.	All costs associated with the supply, delivery, placing and compaction of the base material and bituminous cold mix and all activities and material necessary for maintenance of the temporary pavement in a safe condition until the permanent restoration is executed.
1152.13 Temporary steel plating	m ² of trench area plus adequate allowance for support on both sides of the trench calculated by multiplying the trench width by the actual length of trench to be covered.	All costs associated with the hire, delivery, placement, securing and subsequent removal and return to depot of the steel plates and all activities and materials necessary for maintenance of the plating until permanent restoration is executed.
1152.14 Flexible subbase	m ² of trench calculated by multiplying the trench width by the length.	All costs associated with the removal of temporary pavement, supply, delivery, spreading and compaction.
1152.15 Flexible base	m ² of trench calculated by multiplying the trench width by the length.	All costs associated with the removal of temporary pavement where no subbase is required, supply, delivery, spreading and compaction.
1152.16 Carriageway wearing surface (course) - 1152.16(1) Asphaltic concrete.	m ² of new surface area in conformance with this Worksection calculated from the trench width +200 mm (or up to 800 mm as agreed)	All costs 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.

Pay items	Unit of measurement	Schedule rate inclusions
- 1152.16(2) Sprayed bituminous surfacing. - 1152.16(3) Concrete.	by the length.	For item 1152.16(3) All costs associated with the forming, compaction of foundations, supply, delivery and compaction of mass concrete subbase, supply, delivery, placing, finishing and curing concrete base. Where documented, include the supply and placement of reinforcing steel and the provision of pavement markings, as appropriate.
1152.17 Footpaths and driveways - 1152.17(1) Asphalt/sprayed bituminous seal. - 1152.17(2) Plain concrete. - 1152.17(3) Textured/patterned concrete.	m ² of paved surface, including driveways. Width and length as documented.	Give separate rates for each thickness of footpath or driveway. For item 1152.17(1) , all costs associated with the forming, compaction of foundations, supply, delivery and compaction of subbase and bituminous material. For items 1152.17(2) and 1152.17(3) all costs 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 documented, include the supply and placement of reinforcing steel for this pay item.
1152.18 Clean up	m ² of carriageway and/or footway surface or other surface as applicable. Width and length documented.	All costs associated with the cleaning up of the Work site and transporting off-site and disposal of material including any applicable tipping fees.

4.5 ANNEXURE - REFERENCED DOCUMENTS

The following documents are incorporated into this worksection by reference:

AS 1141		Methods for sampling and testing aggregates
AS 1141.11.1	2020	Particle size distribution - Sieving method
AS 1289		Methods of testing soils for engineering purposes
AS 1289.5.1.1	2017	Soil compaction and density tests - Determination of the dry density/moisture content relation of a soil using standard compactive effort
AS 1289.5.2.1	2017	Soil compaction and density tests - Determination of the dry density/moisture content relation of a soil using modified compactive effort
AS 1289.5.6.1	1998	Soil compaction and density tests - Compaction control test - Density index method for a cohesionless material
AS 1289.5.7.1	2006	Soil compaction and density tests - Compaction control test - Hilf density ratio and Hilf moisture variation (rapid method)
AS 1289.6.1.2	1998	Soil strength and consolidation tests - Determination of the California Bearing Ratio of a soil - Standard laboratory method for an undisturbed specimen
AS 1742		Manual of uniform traffic control devices
AS 1742.3	2019	Traffic control for works on roads
AS/NZS 2891		Methods of sampling and testing asphalt
AS/NZS 2891.1.1	2013	Sampling - Loose asphalt
AS 2891.1.2	2023	Sampling - Coring method
AS/NZS 2891.3.1	2013	Binder content and aggregate grading - Reflux method
AS 4000	1997	General conditions of contract
AS 5488		Classification of subsurface utility information (SUI)
AS 5488.1	2022	Subsurface utility information
AS 5488.2	2022	Subsurface utility engineering (SUE)

Austrroads AP-C87	2015	Austrroads glossary of terms
SOCC Guide	2018	Guide to codes and practices for streets opening
SWN Underground assets	2007	Work near underground assets - Guide

5 ANNEXURE M – CESSNOCK CITY COUNCIL SPECIFIC CLAUSES

M1.	Variations to or non-conformances with Council's AUS-SPEC are to be evaluated with reference to the procedure in Council's <i>Development Engineering Handbook</i> . Acceptance is to be obtained in writing from: an authorised representative of Council's Director of Infrastructure and Engineering Services.	Variation procedure
M2.	This specification applies in addition to any development consent (DA) conditions. If there is any inconsistency, the conditions of consent shall prevail.	DA Conditions
M3.	Refer to the Cessnock City Council <i>Development Engineering Handbook</i> for final inspection, works-as-executed and handover requirements.	Completion

6 AMENDMENT HISTORY

0	15/01/2024	First Published
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