



ACT
Government

ROAD OPENING & RESTORATION 03H

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INFRASTRUCTURE
TECHNICAL
SPECIFICATION
03 - UNDERGROUND SERVICES

Transport Canberra and
City Services

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1 ROAD OPENINGS AND RESTORATIONS

1.1 General

1.1.1 Responsibilities

1.1.1.1 General

Requirement: Provide road opening and restoration works for installation of services within public road reserves comprising clearing, excavation, backfilling and restoration of surfaces, as documented. This Specification excludes the installation activities of the relevant public utility services.

1.1.2 Cross references

General: The following documents are related to this Specification.

1.1.2.1 ACT Legislation

Electrical Safety Act

Gas Safety Act

Public Roads Act

Road Transport (General) Act

Scaffolding and Lifts Act

Scaffolding and Lifts Regulation

Utilities Act

Work Health and Safety

1.1.2.2 Commonwealth Legislation

Telecommunications Act

1.1.2.3 Specifications

Requirement: Conform to the following:

MITS 00	Preliminaries
MITS 01	Traffic Management
MITS 02	Earthworks
MITS 04	Flexible pavement construction
MITS 06	Concrete kerbs, footpaths and minor works
MITS 08	Incidental works
MITS 09	Landscape

1.1.3 Referenced documents

1.1.3.1 Standards

General: The following documents are incorporated into this Specification by reference:

Australian standards

AS 1289	Methods for testing soils for engineering purposes
AS 1289.5.4.1	Soil compaction and density tests – Compaction control test – Dry density ratio, moisture variation and moisture ratio
AS 1289.5.6.1	Soil compaction and density tests – Compaction control test – Density index method for a cohesionless material
AS 1289.5.7.1	Soil compaction and density tests – Compaction control test – Hilf density ratio and Hilf moisture variation (rapid method)
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	Glossary of terms – Road and traffic engineering
AS 1742	Manual of uniform traffic control devices
AS 1742.3	Traffic control devices for works on roads

Street Openings Conference

Guide to codes and practices for street openings

1.1.3.2 Other publications

Proprietary products: To *TCCS Products previously considered for use list*

1.1.4 Interpretation

1.1.4.1 Abbreviations

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

CBR: California Bearing Ratio.

1.1.4.2 Definitions

General: For the purposes of this Specification the following definitions apply in addition to those of AS 1348:

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 and of manually propelled vehicles.

Pavement: That portion of a carriageway placed above the subgrade for the support of, and to form a running surface for, vehicular traffic.

Selected material zone: The top part of the Upper zone of formation in which material of a specified higher quality is required.

Shared trench: A common service trench for telecommunications, gas or electrical services in accordance with the Shared trench agreement for the ACT.

Shoulder: The portion of the carriageway beyond the traffic lanes and contiguous and flush with the surface of the pavement.

Verge (urban): That portion of the road formation not covered by the carriageway.

1.1.5 Hold points and witness points

1.1.5.1 Notice

General: Give written notice to the Authorised Person so that the documented inspection and submissions may be made to the **Hold point table** and the **Witness point table**.

Table 3H-1 Hold point table

Item	Clause title	Requirement	Notice for inspection	Release by
Execution				
3H.1	Excavation - Trench	Submit proof of approval of method of excavation	3 working days before excavation	Authorised Person
3H.2	Trench backfill – General	Submit proposed recycled material for approval	2 weeks before excavation	Authorised Person
3H.3	Surface restoration - Subbase and base	Approval of source and installation of material	1 working day before restoration of pavement	Authorised Person
3H.4	Surface restoration - Pathways and paved public areas	Approval to retain in place temporary subbase material	1 working day before restoration of pavement	Authorised Person

Table 3H-2 Witness point table

Item	Clause title	Requirement	Notice for inspection
Execution			
3H.1	Surface treatment removal - Concrete and asphalt pavements	Removal and legally dispose	3 days before removal
3H.2	Surface treatment removal - Segmental paving units	Hand removal and stacking on pallets	24 hours before removal
3H.3	Surface treatment removal - Segmental paving units	Removal and legally dispose of existing concrete edging	3 days before removal
3H.4	Surface treatment removal - Grass	Unsuitable grass to be removed and legally disposed of	3 days before removal
3H.5	Surface treatment removal - Small plants, shrubs and trees	Plants suitable for replanting to be stored. Unsuitable plants to be legally disposed of.	7 days before removal
3H.6	Excavation - Stockpiles	Stockpile at sites nominated by Authorised Person	3 days before removal
3H.7	Restoration preparation - Carriage pavements and pathways	Condition determined by Authorised Person	As directed

1.2 Execution

1.2.1 Provision for traffic

1.2.1.1 General

Requirement: Conform to *MITS 01 Traffic Management*.

1.2.2 Site establishment

1.2.2.1 Survey

Requirement: Confirm site surface and benchmarks. Conform to *MITS 00A General requirements*.

1.2.3 Set-out of works

1.2.3.1 Preparation

Initial limits: Set-out the limits of the proposed excavation for trenches, pits and chambers required within the road reserve. Set-out the proposed trench at the minimum width for the depth of service and, wherever possible, at right angles to the road reserve boundary.

Adjusted limits: Adjust the set-out to minimise or eliminate residual small portions of paving slabs. Make adjustments with respect to the existing paved surfaces and joint patterns.

1.2.3.2 Survey marks

Authority requirements: Refer any trench or surface work proposed in the vicinity of Survey Marks to the Environment, Planning and Sustainable Development Directorate – Environment, ACT Government or other appropriate Authority responsible for survey records, prior to commencement of Work, to obtain protection or relocation requirements.

1.2.4 Surface treatment removal

1.2.4.1 Concrete and asphalt pavements

Method: Saw cut trench set-out lines located on concrete or asphalt footpaths, and asphalt carriageway pavements for the full depths of the bound pavement layers except where the set-out line is located along expansion joints.

Removal of concrete and asphalt: Break out concrete or asphalt footpath and carriageway pavement material between the trench set-out lines, remove and legally dispose of off-site or stockpile at a site nominated by the Authorised Person.

This is a **WITNESS POINT**.

1.2.4.2 Segmental paving units

Removal: Take up by hand segmental paving units both full and cut, between the trench set-out lines, and neatly stack on wooden pallets at locations as directed by the Authorised Person.

This is a **WITNESS POINT**.

Concrete edging: Break out, remove and legally dispose of off-site or stockpile at a site nominated by the Authorised Person.

This is a **WITNESS POINT**.

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

1.2.4.3 Grass

Method: Neatly cut grass turf between trench set-out lines into 300mm squares. Take up and store the turf at locations as directed by the Authorised Person and water as directed during the storage period. If the grass is considered by the Authorised Person to be unsuitable for reuse, remove and legally dispose of it off-site.

This is a **WITNESS POINT**.

1.2.4.4 Small plants, shrubs and trees

Suitability for re-planting: As determined by the Authorised Person.

Storage: Take up small plants, shrubs and trees, between the set-out lines, and store at locations nominated by the Authorised Person. Wrap the root ball in a hessian or plastic bag with drain holes and water as directed during the storage period.

Unsuitable vegetation: Remove and legally dispose of off-site other plants deemed unsuitable for replanting.

This is a **WITNESS POINT**.

1.2.5 Excavation

1.2.5.1 General

Excavation: Conform to *MITS 03A Trenching for underground services* and *MITS 02B Bulk Earthworks*.

Dimensions: Excavate trenches to the standard widths and depths for the particular utility service installation required by the relevant Specification or to dimensions shown on the drawings.

Approval by other public utility authorities: Where other public utilities exist in the vicinity of the Works, obtain the approval of the relevant authority to the method of excavation before commencing excavation. Provide proof of approval of the relevant authority to the Authorised Person.

This is a **HOLD POINT**.

1.2.5.2 Unsuitable material

Confirmation of inadequate foundation material: Remove and dispose of inadequate foundation material as directed by the Authorised Person to *MITS 03A Trenching for underground services* and replace the material as per *MITS 03A Bedding and backfilling and Bedding material compaction requirements table*.

1.2.6 Trench backfill

1.2.6.1 General

Installation: In conformance with the relevant Specification and any specific utility authority requirements as indicated on the Drawings.

1.2.6.2 Trenches under roads

Scope: Trenches that cross or are aligned within existing or proposed roads.

Backfill material: Backfill trenches above the pipe overlay zone to the subgrade level with an acceptable Subbase material complying with *MITS 04 Flexible pavement construction*.

Backfilling and compaction: To *MITS 03A Trenching for underground services*.

1.2.6.3 Trenches under paths and driveways

Scope: Trenches that cross or are aligned within existing or proposed paths, driveways or areas of stone pitching.

Backfill material: Material that conforms with General Fill to *MITS 02B Bulk Earthworks* will be acceptable as backfill material to utility, water, sewer and stormwater trenches above the pipe overlay zone under footpaths and driveways, provided the requirements of **Compaction under paths and driveways table** are met.

The backfill material shall be assessed prior to use by a geotechnical engineer. It shall have a maximum particle size of 75mm, a maximum Plasticity Index of 10% and exclude organic soils, topsoil, silts and other materials with deleterious engineering properties such as vegetation, timber, tree roots, plastic pipes or sheeting and high plasticity clays. The maximum compacted layer thickness shall be 150 mm.

Backfilling and compaction: To *MITS 03A Trenching for underground services*.

Table 3H-3 Compaction under paths and driveways table

Zone	Relative compaction (SDD)
General Fill Acceptable as backfill material:	
Below 1.5 m of finished surface	95%
Within 1.5 m of finished surface	100%

1.2.7 Restoration preparation

1.2.7.1 Carriageway pavements and pathways

Make good: Restore carriageway pavements and pathways to match to existing surface levels and alignments seamlessly and to as good as or better than their existing condition.

Existing condition: The condition existing at the commencement of the works as determined by the Authorised Person.

This is a **WITNESS POINT**.

1.2.7.2 Structures

Levels: Set the levels of utility service surface pits, access chamber frames and lids and any other affected structures, so that carriageway pavements and footpaths can be restored to original levels. Liaise with other utility authorities if any utility service surface box requires adjustment or replacement prior to restoration.

1.2.7.3 Approval

Before paving: Prior to the commencement of any paving restoration work, form up and prepare the areas for paved restoration and present the prepared areas to the Authorised Person for approval.

1.2.8 Surface restoration

1.2.8.1 Temporary pavements

General: To *MITS 01 Traffic Management*.

1.2.8.2 Temporary pavement removal

Temporary pavement material: Remove and dispose of off-site prior to final carriageway pavement restoration.

Temporary base material: If approved by the Authorised Person, the temporary base material may remain in place and be incorporated into the final pavement if it complies with the requirements of *MITS 04 Flexible pavement construction* and the Drawings for the subbase (including the requirements for compaction and testing) and has not been disturbed or contaminated during removal of the temporary surfacing.

1.2.8.3 Subbase and base

Material: Provide crushed rock, CRB20-2 or CRS20 material, from a source approved by the Authorised Person and configure in layers and depths as indicated in the Drawings.

Supply and installation: To *MITS 04 Flexible pavement construction*.

This is a **HOLD POINT**.

1.2.8.4 Carriageway bituminous wearing surface

Materials and installation: To *MITS 04 Flexible pavement construction* and the Drawings.

Surface tolerance: Departures from a 3m straightedge less than \square 5mm 7 to 10 days after completion, and the surface such that an impact is not transmitted to traffic passing over the restoration.

Construction details:

- > Extend the bituminous surfacing and/or asphalt to a minimum dimension of 100mm beyond the perimeter of any trench excavation.
- > Make the joint between new and existing asphalt vertical and cut by diamond saw or milling machine.
- > Treat the vertical face and subgrade surface of the old asphalt by bituminous tack coating.

Thickness tolerance: To *MITS 04 Flexible pavement construction*.

1.2.8.5 Pathways and paved public areas

Materials generally: Consistent with the surface existing before commencement of the works, or as directed by the Authorised Person.

Subbase: 150mm crushed stone CRB20-2 compacted to 100 percent relative compaction in conformance with AS 1289.5.4.1. If approved by the Authorised Person, the temporary material may remain in place and be incorporated into the final subbase.

This is a **HOLD POINT**.

Differential levels between footpath panels: Match the surface level at any point along the panel's edge with the adjoining footpath surface within \pm 5mm.

1.2.8.6 Concrete footpaths

General: Include textured and patterned concrete to match existing.

Construction: To *MITS 06 Concrete kerbs, footpaths and minor works* and the Drawings

1.2.8.7 Asphalt footpaths

Materials and installation: To *MITS 04 Flexible pavement construction* and the Drawings.

1.2.8.8 Segmental paving units

Materials and installation: To *MITIS 07 Segmental paving* and as follows:

- > Laying: Re-lay to match the pattern and surface levels of the existing paving.
- > Damaged paving units: Replace with new units, paving units which are unsuitable for relaying, as determined by the Authorised Person, with new units of the same material, type, size and colour as the existing.

Tree surrounds, service boxes and poles: Match the pattern at similar existing features in the immediate area or be as directed by the Authorised Person.

1.2.8.9 Turfed verges

Topsoil: 50mm minimum thickness, placed on the subgrade prior to restoration of turfed verges.

Existing grass turf: Re-lay to conform to the original grassed surface.

Method: Hand butt turfs against each other in rows and topdress the seams with topsoil, rolled and watered to ensure direct and uniform contact with the topsoil.

Additional turf: If required complete the affected area with turf of the same species.

1.2.8.10 Verge plants, shrubs and trees

Topsoil: Match the surrounding thickness, placed on the subgrade prior to restoration of turfed verges.

Planting holes: Excavate, at locations shown on the Drawings or as determined by the Authorised Person, and spread the material evenly around each hole.

Plant material: Re-plant existing plants, shrubs and trees which are suitable for replanting as determined by the Authorised Person. Backfill the planting hole with topsoil and compact by foot up to surface level.

Staking: Stake the shrubs and trees as directed by the Authorised Person and water and maintain for 2 months after the date of formal completion of the restoration works.

1.3 Completion

1.3.1 Submissions

Work as Executed Records: To *MITIS 00B Quality Requirements*.

2 MEASUREMENT AND PAYMENT

2.1 Measurement

2.1.1.1 General

Payments made to the Schedule of Rates: To *MITS 00 Preliminaries*, this Specification, the Drawings and the **Pay items table**.

2.1.1.2 Methodology

The following methodology will be applied for measurement and payment:

- > Allow for all work, materials, testing and quality assurance requirements in each Pay Item.
- > Erosion and sedimentation control: To *MITS 00C Control of erosion and sedimentation*.
- > Topsoil removal: To *MITS 02B Bulk earthworks*.
- > Concrete work: To *MITS 10 Concrete works*.
- > Miscellaneous minor concrete work: To *MITS 10 Concrete works*.
- > Provision for traffic, both vehicular and pedestrian, is deemed to be included in the schedule rates generally in conformance with *MITS 01 Traffic Management*.
- > Segmental paving works are measured and paid in conformance with *MITS 07 Segmental paving*.
- > All costs associated with removal of water from excavations shall be included within respective excavation rates for stormwater pipes and drainage structures.
- > All costs associated with excavation of trenches for stormwater drainage, in accordance with this Specification: To *MITS 03B Pipe drainage*, *MITS 03C Precast box culverts* and *MITS 03D Drainage structures*.

2.2 Pay Items

Table 3H-4 Pay items table

Item No	Pay Items	Unit of Measurement	Schedule rate scope
3H.1	Subbase backfill under roads	m ³ The theoretical volume shall be calculated by multiplying the minimum trench width by the depth of backfill material measured from the pavement subgrade level to the top of the overlay zone and multiplied by the length of the pipe/conduit under roads. > For pipes and conduits < 100mm diameter the minimum trench width shall be 300mm. > For pipes and conduits ≥ 100mm diameter the minimum trench width shall be the outside pipe diameter plus 300mm, or as specified.	All activities extra over the relevant trench item for each service associated with associated with the supply, pre-treatment, placement and compaction of subbase backfill under roads.

Item No	Pay Items	Unit of Measurement	Schedule rate scope
3H.2	General Fill acceptable as backfill under paths and driveways	m ³ The theoretical volume shall be calculated by multiplying the minimum trench width by the depth of backfill material measured from the pavement subgrade level to the top of the overlay zone and multiplied by the length of the pipe/conduit under paths and driveways. > For pipes and conduits < 100mm diameter the minimum trench width shall be 300mm. > For pipes and conduits ≥ 100mm diameter the minimum trench width shall be the outside pipe diameter plus 300mm, or as specified.	All activities extra over the relevant trench item for each service associated with associated with the selection, pre-treatment, placement and compaction of General Fill acceptable as backfill under paths and driveways



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