ACT Government

VERGES

MUNICIPAL INFRASTRUCTURE STANDARDS 06

Transport Canberra and City Services

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1/0				
1/1	N/A	Acknowledgement of Country added		
	1.1.1.1	Reference to Aboriginal and Torres Strait Islander culture added		
	1.1.2.1	Relocation of National Capital Plan from Act Legislation		
	1.1.3.2	Nature strip development application Form version number removed Austroads Guide to Road Safety added		
	1.1.5.2	Reference to standard drawing showing kerb line corrected		
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ACKNOWLEDGEMENT OF COUNTRY

Transport Canberra and City Services (TCCS) acknowledge that Aboriginal people are the Traditional Owners of Australia. We acknowledge and pay respect to the Ngunnawal peoples as the custodians of the land and waters that we live and thrive on today here in the ACT.

TCCS acknowledges that Canberra's cultural and natural heritage was maintained by the Ngunnawal people for many generations before colonial settlement on Australian soil. Aboriginal people's management of the land preserved the natural balance of local plants and animals. This knowledge of the environment in which we live is critical to the protection and restoration of our land today.

It is our responsibility to preserve and encourage Ngunnawal, Aboriginal and Torres Strait Islander cultural integrity. When using this document, consider opportunities to incorporate Ngunnawal, Aboriginal and Torres Strait Islander culture into the verges designs within the ACT.

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1 VERGES

1.1 General

1.1.1 Responsibilities

1.1.1.1 Objectives

Objectives: Provide verge designs associated with municipal streets in the ACT. Consider the following requirements for verges:

- Ngunnawal and Aboriginal culture and values.
- An improved urban structure, amenity and revitalisation that minimises whole of life costs.
- Space for the provision and maintenance of underground and above ground public utilities.
- Space for public amenities such as public telephones, post boxes and bus stops in appropriate areas.
- Landscaping including trees to improve the appearance of the streetscape.
- Drainage functions for overland flows.
- Provide for the movement of pedestrians and cyclists.
- Convenient and safe access to the roadway and blocks for pedestrians, vehicles and cyclists.
- Conformance to the Disability Discrimination Act.
- Appropriate access for buses, emergency and service vehicles.
- A buffer area for reduction in traffic noise level at dwellings.
- An area to adjust for level differences between the carriageway and blocks.
- Consideration to Safety in design, operation and demolition.

Requirement: The verge should be of sufficient width to allow space for all relevant services, landscaping, indented parking, future carriageway widening, paths and swale drains.

Territory Plan: This Design Standard provides technical support to the *Estate Development Code* to provide more detailed design requirements for the design of verges in the ACT.

1.1.1.2 Precedence

Where any document except legislation or the *Territory Plan* issued referenced in this Design Standard includes technical requirements that conflict with this Design Standard, consult with the service authority and TCCS for clarification.

1.1.2 Cross references

1.1.2.1 Commonwealth Legislation

The following Commonwealth Legislation is relevant to this Standard:

Australian Capital Territory (Planning and Land Management) Act

Disability Discrimination Act

National Capital Plan

1.1.2.2 ACT Legislation

The following ACT Legislation is relevant to this Standard:

Environment Protection Act

Planning and Development Act Planning and

Development Regulation Public Roads Act

Public Unleased Land Act

Territory Plan and General Codes

Tree Protection Act

Utilities Act

Utility Networks (Public Safety) Regulation

Work Health and Safety Act

1.1.2.3 Design Standards

This Design Standard references the following component standards:

MIS 01 Street planning and design

MIS 03 Pavement design

MIS 04 Subsurface drainage

MIS 05 Active travel facilities design

MIS 07 Driveways

MIS 08 Stormwater

MIS 10 Fences, guardrails and barriers

MIS 12 Guide signs

MIS 14 Public lighting

MIS 20 Street and park furniture

MIS 24 Soft landscape design

MIS 25 Plant species for urban landscape projects

1.1.2.4 Specifications

The following Specifications are related to this standard:

MITS 03 Underground services

MITS 06 Minor concrete works

MITS 07 Segmental paving

MITS 09 Landscape

1.1.2.5 TCCS Reference Documents

The following TCCS reference documents are related to this standard:

Reference document 4	Protection of public landscape assets
Reference document 6	Design Acceptance submissions
Reference document 7	Operational acceptance submissions
Reference document 8	WAE quality records
Reference document 9	Final acceptance submissions
Reference document 10	Landscape consolidation

1.1.2.6 Design guides

The following design guides are related to this standard:

Strategic Bushfire Management Plan (SBMP) (ACT Emergency Services Authority)

Canberra Central Design Manual

Development Control Code for Best Practice Waste Management in the ACT (ACT No Waste)

Network Architecture and Technology (NBN)

Underground services in a shared trench agreement (NBN Co/Telstra/TransACT/Evo Energy)

Water Supply and Sewerage Standards (Icon Water)

1.1.3 Referenced documents

The following documents are incorporated into this design standard by reference:

1.1.3.1 Australian Standards

AS 1742	Manual of uniform traffic control devices
AS 1742.2	Part 2: Traffic control devices for general use
AS 2890	Parking facilities
AS 2890.1	Part 1: Off street car parking
AS 2890.2	Part 2: Off street commercial vehicle facilities

1.1.3.2 Other publications

Nature strip development application Form, TCCS.

Austroads

AGRD	Austroads Guide to Road Design
AGRD03	Part 03: Geometric design
AGRD06	Part 06: Roadside design, safety and barriers
AGRD06A	Part 6A: Pedestrian and cyclist paths
AGRD06B	Part 6B: Roadside environment
AGRS	Austroads Guide to Road Safety
AGRS09	Part 09: Roadside hazard management
AGTM	Austroads Guide to Traffic Management
AGTM11	Part 11: Parking

1.1.4 Standards

1.1.4.1 General

Road design: To AGRD06A Pedestrians and cyclist paths.

Paths: To MIS 05 Active travel facilities design.

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

1.1.5 Interpretation

1.1.5.1 Abbreviations

General: For the purposes of this Design Standard the following abbreviations apply:

LMPP: Landscape Management and Protection Plan

TCCS: Transport Canberra and City Services, ACT Government and its successors.

1.1.5.2 Definitions

General: For the purpose of this Design Standard, the definitions of terms used to define the components of the road reserve are in conformance with *AS 1348, Glossary of Austroads Terms* and *AGRD03.*

Other definitions that pertain to this Design Standard are outlined below:

Block: A parcel of land, whether or not the subject of a lease.

Domestic driveway: Has the same meaning as in *AS 2890.1*; namely a driveway serving from 1 to 3 dwelling units in residential zones and designed for light vehicle traffic only.

Driveway: Vehicle access across the verge to the block from the edge of the carriageway to the property line

Heavy Duty Driveway: Is a commercial or industrial driveway, or a residential driveway other than a domestic driveway, designed in accordance with *AS 2890.2*.

Kerb line: Also known as the face of kerb, it is the location on the kerb, kerb and gutter or open concrete invert from which the road carriageway width is measured. Refer to *ACTSD-0101* for actual location for eachkerb type.

Community Path: A path for the joint use of pedestrians and cyclists.

Module width: The nominal cross-sectional width reserved for a particular service or group of services within the verge, measured at the surface level. The module width includes consideration for minimum offsets to other services and maintenance access requirements for respective authorities.

Nature strip: refer to verge.

Shared trench: A trench which is used to accommodate two or more reticulated services.

Verge: The part of the street reserve between the carriageway and the boundary of adjacent blocks (or other limit to street reserve). It may accommodate public utilities, paths, stormwater flows, street lighting poles and landscaping including trees.

Verge width: The distance measured from kerb line to road reserve property line, including any indented car parking bays, bus bays or kerb crossing widths.

1.2 Pre-design planning

1.2.1 Consultation

1.2.1.1 TCCS and other authorities

Requirements: Consult with TCCS and other relevant authorities during the preparation of design. In addition to the requirements of this Design Standard, identify the specific design requirements of these authorities.

Submission: Prepare a Landscape Management and Protection Plan (LMPP) for approval by TCCS for temporary accesses or any work within the verge.

Verge works in existing residential areas: Refer to the *Nature strip development application Form.*

1.2.1.2 Public consultation

Non-statutory consultation: Undertake public consultation if required by the project brief.

Statutory consultation: Conform to the requirements of the *Planning and Development Act*.

1.2.1.3 Utilities services plans

Existing site conditions: Obtain plans from all relevant utilities and other organisations whose services, trees, important ecological habitats or other assets exist within the area of the proposed development. Plot this information on the relevant drawings including the plan and cross-sectional views. As a minimum, designs should refer to 'Dial-before-you-dig' information that is readily available in most areas.

Responsibility: Confirm service plans accuracy with onsite inspection and also potholing if deemed necessary. Protect existing assets to the satisfaction of asset owners.

Proposed new services: Detail any new services proposed or relocated as part of the proposed works.

1.2.1.4 Safety in Design

Requirement: Implement safety in design processes in accordance with the *Work Health and Safety Act*. Include consideration for the following:

- Traffic management, including site distances for all users.
- Identification and protection of existing services.
- Maintenance access for services.

2 VERGE DESIGN

2.1 Design criteria

2.1.1 Verge width

2.1.1.1 General

Requirement: Provide sufficient width within the verge to accommodate all services, tree plantings, paths, landscaping, street furniture and other facilities and conform to the *Estate Development Code* where applicable. Include consideration for the following:

- Maintenance access for respective authorities.
- Select trees that are appropriate for the verge space on maturity.
- Flood protection for leased blocks.

2.1.2 Verge crossfall

2.1.2.1 General

General: Changes of grade across the verge should not be so severe that vehicles cannot easily enter block driveways without scraping. In general, because driveways can be located at any location along the verge, the whole verge needs to be designed to suit vehicle access.

Crossfalls in verge: Grade towards the carriageway unless the verge has been designed to convey run-off into open space areas. Conform to the following:

- Desirable minimum: 1 in 50.
- Desirable maximum: 1 in 6.

Paths: Conform to *MIS 05 Active travel facilities design.*

Driveways: Conform to *MIS 07 Driveways*.

2.1.2.2 Crossfall adjacent to kerb

Verges grading away from carriageway: Provide an absolute minimum 2.5m wide strip adjacent to the kerb grading towards the carriageway at 1 in 50 with consideration for the following;

- Vehicle access to blocks with sufficient changes of grade to prevent scraping.
- Freeboard for stormwater gutter flows.
- An area for wheeled bin placement.
- An area for pedestrian and cycle refuge.
- An appropriate module width for the water main, if required.
- An area for maintenance access to utility services.

2.1.3 Emergency access

General: Edge roads should be a minimum of 7.5m wide or provided with indented parallel parking provision. Where the approved carriageway width is less than 7.5m, provide a minimum hardstand area on the hazard side 1.5m clear of retaining walls or stone pitched batters.

2.1.4 Waste collection

General: Conform to the requirements in the *Development Control Code for Best Practice Waste Management in the ACT.*

2.1.4.1 Turning provision

Truck overhang: In brownfield designs, check clearance for waste truck overhang during turning movements. Where required, set back landscaping, facilities and infrastructure to accommodate the overhang of the truck during turning movements. If required, provide a minimum set back of 1.5m.

2.2 Service Modules

2.2.1 General

General: Design verges to accommodate respective module widths and locations for the required infrastructure. This Standard provides typical module widths for standard residential services at average depths, as summarised in **Table 06-1 Infrastructure module widths table.** Any deviation from this may require adjusted module widths. It is the designer's responsibility to confirm appropriate module widths for each asset.

Table 06-1 Infrastructure module widths table

Asset	Module width
Stormwater	0.35-1.4m depending on sump type
Subsoil drains	0.3m
Sewer	2.0m
Water	0.9m
Shared trench	1.2m
Non-potable water mains	0.9m
Above ground electrical assets	Varies, module width is for asset location only
Street lights	0.6m
Trunk services	Specific to each service. To be individually designed
Paths	1.5 – 2.5m
Trees	1.2m

2.2.2 Stormwater drainage

Standard: To *MIS 08 Stormwater.*

Module width:

> Including R/QS sump:

- 1.4m for sumps located on modified layback kerb (MLBK).
- 1.2m for sumps located on kerb other than MLBK.

- Kerb inlet sumps: 0.35m.

Location: Locate pipes to minimise the number of road crossings for service ties. Where possible, locate stormwater on the low side of the road where water supply mains are located on the high side. Align stormwater pipes behind the kerb to correspond with the selected sump design.

Clearance to trees: Provide minimum 0.6m clearance from stormwater pipes to trees measured from the edge of the trench to the centreline of the tree.

Clearance to other underground services: To *MIS 08 Stormwater.*

2.2.3 Sewer

Standard: To *Water Supply and Sewerage Standards, Icon Water*.

Module width: Typically 2.0 m, Icon Water may consider or require exceptions where it can be demonstrated that their assets can be accessed within a narrower module or wider module width. Specifically, note the sewer depth to demonstrate compliance.

Paths: Sewer mains may be located under the path alignment. Manholes should be either wholly located within the path, or outside the path alignment, to reduce differential settlement.

Clearance to trees: Provide minimum 1.8m clearance from sewer pipes <DN375 to trees measured from the centreline of the pipe to the centreline of the tree. Refer to Icon Water for sewer pipes ≥DN375.

Clearance to other underground services: To *Water Supply and Sewerage Standards, Icon Water.*

2.2.4 Water supply mains

Standard: To *Water Supply and Sewerage Standards, Icon Water.*

Location: Water mains should be located on the high side of the road reserve where possible to reduce the likelihood of property damage in the event of a burst water main. Locate water mains to be sufficiently clear of the stormwater pipeline to avoid deflection around sumps and to allow adequate clearance to branch valves. When the water main is located on the low side, the full verge width should slope towards the carriageway.

Module width: Typically 0.9m, Icon Water may consider or require exceptions.

Stormwater: Kerb inlet sumps may be used, to avoid bends in water main pipe alignment.

Clearance to trees: Provide minimum 1.2m clearance from water supply pipes <DN300 to trees measured from the centreline of the pipe to the centreline of the tree. Refer to *ICON Water* for water supply pipes ≥DN300.

Clearance to other underground services: To *Water Supply and Sewerage Standards, Icon Water.*

2.2.5 Subsoil drains

Standard: To *MIS 04 Subsurface drainage.*

Module width: 0.3m. Location: In front of the kerb.

2.2.6 Shared trench services

General: Shared trenching consists of two or more utility services contained within the one trench. This may include:

- High and low voltage electricity cables and pits.
- Street lighting cable.
- Telecommunication/ broadband conduit and pits.
- Gas mains.

Standard: To *Underground Services in a Shared Trench Agreement.*

Location: The trench centreline should be offset by 90mm from the property boundary to allow trench excavation and access.

Module width: 1.2m.

Overlap: The module width allows for the full trench width required. Additional width outside the module is required intermittently to accommodate pits and above ground structures.

Traffic light controllers: Design for Telstra services within shared trench between traffic light controllers in accordance with Transport Canberra requirements.

2.2.7 Above ground electrical plant and equipment

Overhead electricity: Liaise with ActewAGL regarding any requirements to provide overhead electricity before finalising verge designs.

Electrical plant and equipment: To *ActewAGL* requirements.

Traffic light controllers: To *Transport Canberra* requirements.

Location: Substations and mini-pillars or power poles should be placed clear of future driveways. Substations shall be kept clear of the driveway sight distance envelope. Conform to *MIS07 Driveways*.

Module width: To *ActewAGL Cable Plant Separation Requirements (DRG 3832-018).*

Overlap: Additional width outside the underground service module width is required intermittently to accommodate above ground service structures such as pad-mount substations and mini- pillars.

2.2.8 Street lights

Standard: To *MIS 14 Public lighting.*

Module width: 0.6m.

Location:

- Clearance to underground services: 0.5m.
- Typical clearance to kerb: 1.7m.

2.3 Other services

2.3.1 Trunk services

General: This module is set aside for bulk supply water mains, high pressure gas mains, trunk stormwater, major telecommunication duct runs, high voltage electricity cables additional to normal capacity. Designers should liaise with the relevant service authorities to determine trunk service reservation requirements. Typically, each authority will require a separate trench and module width.

Telecommunications: These are required by telecommunication carriers for linking exchanges or exchange to development areas. The reservation width provided allows for manholes that are offset to the duct run.

Gas: High pressure (>210kPa) gas main can share the trench with telecommunication if the route required is the same and future upgrading of the gas main is not required. Otherwise the gas main should be located in a trunk main reservation.

2.3.2 Curved service alignments

General: Module widths provided in this document and accompanying drawings are the minimum required for a straight street alignment. Services on a curved alignment particularly those, which need to be laid as a series of straight sections will require additional space, and the road reserve should be widened if necessary. Consider the following:

- Length of verge affected.
- The minimum radius at which each service can be laid.
- Any impact for adjoining services.

2.3.3 Non Potable Water mains

Standard: To *MIS 08 Stormwater*.

Location: Non-potable water mains should be located on the high side of the road reserve to reduce the likelihood of property damage in the event of a burst non-potable water main.

Module width: Typically 0.9m, TCCS may consider or require exceptions.

2.3.4 Future services

Reservation modules: Reservation modules for future services are not currently required.

2.4 Trees

2.4.1 General

General: Provide trees within the verge, where required by the *Estate Development Code* and the approved *Estate Development Plan*. Consider the tree growth characteristics (including the root zone) in the overall design of the street. Select appropriate species that allow the trees to grow to capacity and maximise the tree life spans.

Species selection: To *MIS 25 Plant species for urban landscape projects*.

Module width: 1.2m.

Root Barriers: To *MIS 25 Plant species for urban landscape projects*.

Service ties: Service ties are susceptible to tree root intrusion and must be located as far a practical from the root zone. Grouping service ties provides more space for planting and tree development.

Sight lines: Maintain appropriate sight distances, conform to *MIS 07 Driveways.*

2.5 Paths

2.5.1 General

Code: Conform to the *Estate Development Code.*

Standard: To *MIS 05 Active travel facilities design.*

2.5.2 Location

Location: Provide paths within the verge, where required by the *Estate Development Code* and the approved *Estate Development Plan*. Consider the following:

- Provide clearance to the carriageway and from the property line for the safety of all road users.
- Future service repairs to services under paths.
- Avoidance of pits, manholes and sumps partially located within the path to avert potential trip hazards.

Paths are typically located 1.2m from the property boundary in new residential areas.

Commercial zones: Consider fully paved verges in high pedestrian traffic areas. Consider connecting utilities prior to paving to prevent damage to the finished surface.

2.5.2.1 Clearance from carriageway

Requirement: Provide clearance for:

- Kerbside placement of wheeled bins for collections of household garbage and recycling waste (1m).
- Opening car doors when cars are parked at the kerb (1.4m).

2.5.2.2 Clearance from property line

Requirement: Provide clearance between the edge of paths and the property line to ensure clear sight lines to cyclists using the path for a vehicle reversing from a driveway.

Sight distance: *AS 2890 Figure 3.3* indicates criteria to be considered and shows acceptable minimum clearances for paths adjacent to residential blocks. Although clean trunk trees are permitted within the sight distance zone, other objects such as substations or low branching trees are not.

2.6 Road furniture

2.6.1 Bus stops and shelters

Location: Provide bus stops within the verge, where required by the *Estate Development Code*, the approved *Estate Development Plan* and Transport Canberra. Consider the following:

- Provide appropriate site distances to driveways and intersections. If required, locally widen verges to ensure that adequate visibility is available.
- Position bus stops and shelters on the departure side of paths.

Standard: *MIS 05 Active travel facilities design* and *AGRD06A.*

2.6.2 Traffic signs

General: Traffic sign placement shall take precedence over other verge infrastructure and landscaping. The shared use of signs and the use of street furniture (e.g. light poles) for the placement of signs should be adopted whenever possible.

Standard: To *MIS 12 Guide signs.*

3 MATERIALS

3.1 Paved areas

Pavement type: Select the pavement type to suit the particular specific or shared function. Refer to *MIS 03 Pavement design* for the design of trafficable areas.

3.2 Non paved areas

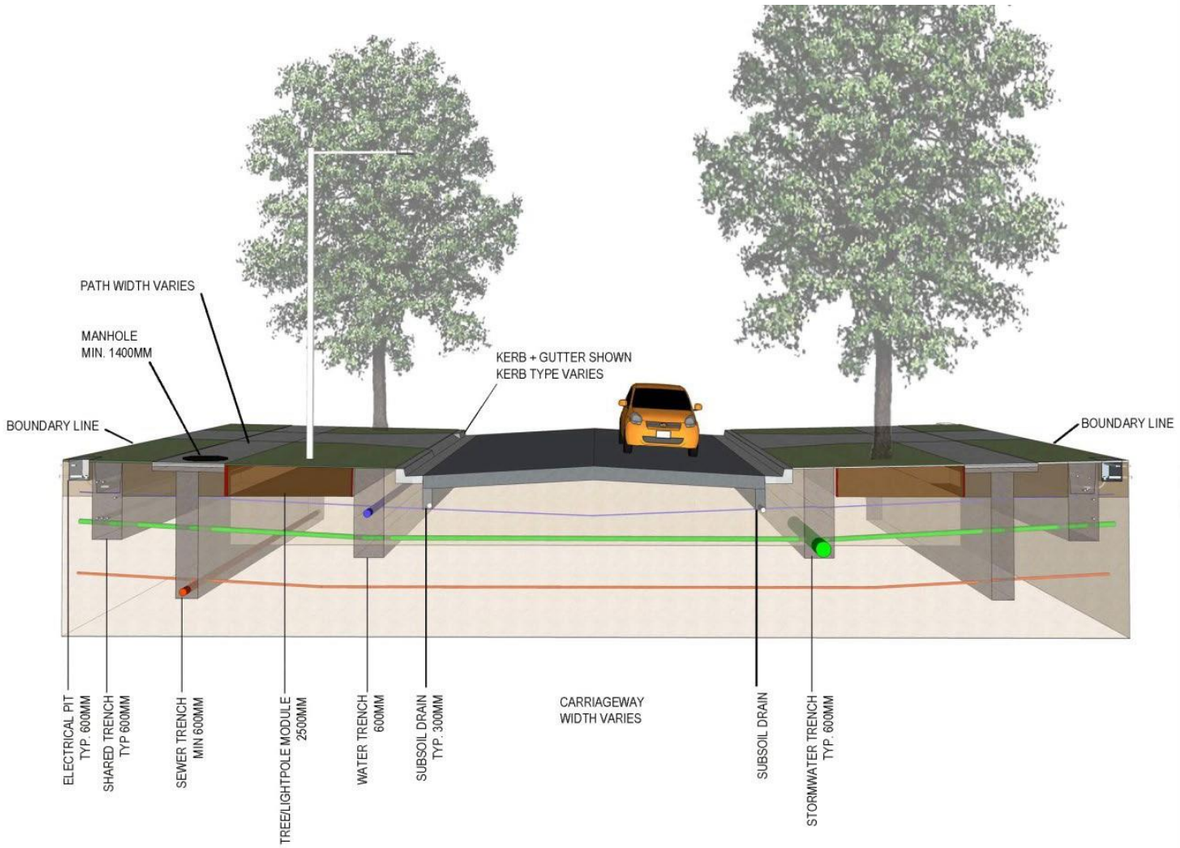
All non paved surfaces of verges are to be topsoiled to a depth of at least 100mm and grassed with an approved dryland grass mix.

4 DOCUMENTATION

Requirements: Comply with *Reference document 6 Design Acceptance submissions.*

APPENDIX A GUIDANCE DRAWINGS

Figure 06-1 Typical Section



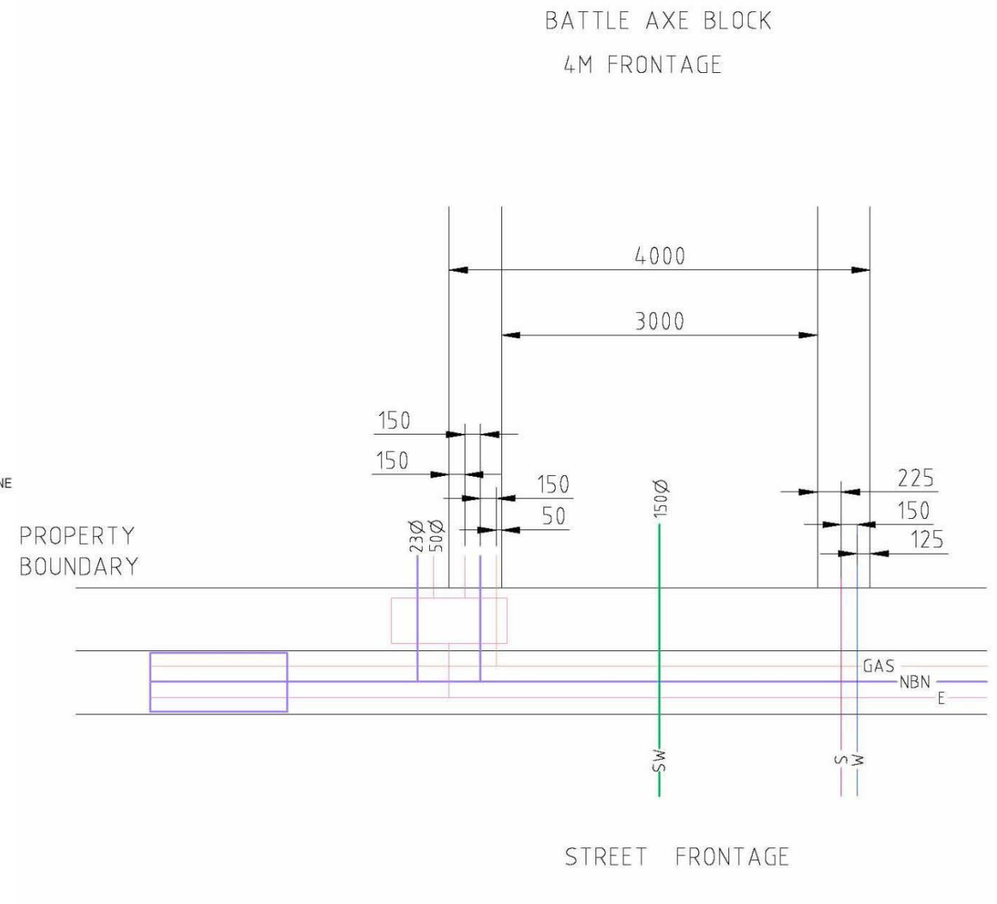


Figure 06-2 Typical battleaxe layout

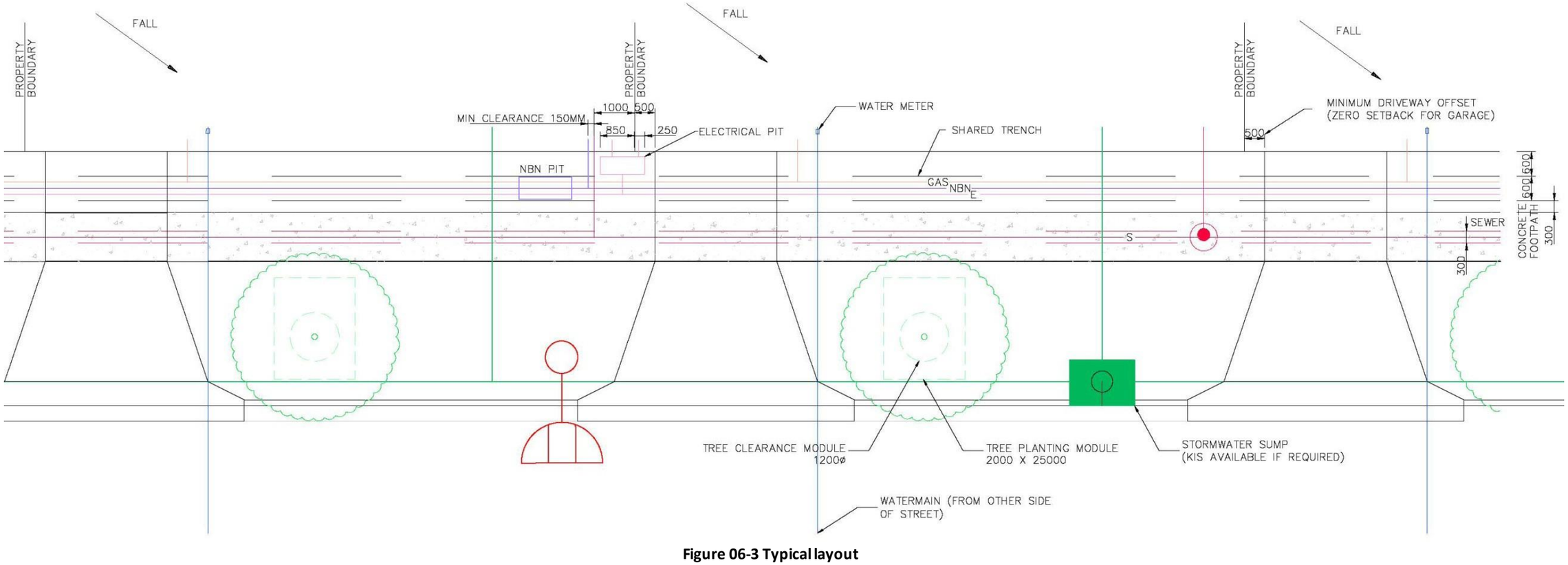


Figure 06-3 Typical layout

ACT Government

Transport Canberra and City Services

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