



Construction Specification for Civil Works

C303 – Service Conduits

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GENERAL

C303.01 SCOPE

The work to be executed under this Specification includes the supply of materials and the installation of electrical and communication conduits, pits and footings for streetlighting columns in accordance with this Specification and the approved design drawings

The Specification excludes the installation of wiring, equipment and streetlighting columns.

Electrical conduits and pits shall be installed in accordance with AS 3000 and the Service and Installation Rules of the local Electricity Supply Authority.

Telecommunication conduits and pits shall be installed in accordance with the *AUSTEL Customer Premises Cabling Manual*.

The Constructor shall complete all necessary notices, pay all fees and charges and arrange for all inspections and tests required by the relevant Authority.

C303.02 DEFINITIONS

The Works – Defined as follows:

- **Developer Infrastructure Works** - work includes subdivisions and any public infrastructure work associated with an approved Development in the ARC local government area requiring a construction certificate.
- **Contracted Works** – infrastructure work undertaken by a Principal Contractor or subcontractor formally appointed by ARC and supervised by ARC.
- **Internal Works** - infrastructure work undertaken by ARC’s day labour workforce.

The Works

Constructor – Defined as the organisation responsible for construction of the Works and the Principal Contractor as defined in the *Work Health and Safety Act 2011*.

Constructor

ARC Representative – Defined as follows:

- **Developer Infrastructure Works** – Nominated ARC officer(s) for the approved Development.
- **For Contracted Works** – the Superintendent.
- **For Internal Works** – ARC Asset Owner.

ARC Representative

Constructor’s Representative – Defined as follows:

- **Contracted Works** – the Principal Contractor’s nominated representative as per the relevant contract.
- **Internal Works** – ARC officer responsible for delivery.

Constructor’s Representative

Developer’s Representative– Defined as the person or organisation appointed by the Developer to administer the Constructor responsible for the delivery of Developer Infrastructure Works.

Developer’s Representative

C303.03 REFERENCE DOCUMENTS

Documents referenced in this Specification are listed in full below whilst being cited in the text in the abbreviated form or code indicated.

***Documents
Standards Test
Methods***

Where not otherwise specified in the relevant Armidale Regional Council (ARC) Construction Specifications or the approved design drawings, the Constructor shall use the latest versions of the Reference documentation, including amendments and supplements, listed in the ARC Construction Specifications at the time of the Works approval.

Currency

(a) Armidale Regional Council (ARC) Specifications

C271 – Minor Concrete Works.

**ARC
Specifications**

(b) Australian Standards

References in this Specification or on the approved design drawings to Australian Standards are noted by their prefix AS or AS/NZS.

**Australian
Standards**

- AS 1289.5.4.1 - Compaction control test - Dry density ratio, moisture variation and moisture ratio.
- AS 1477 - Unplasticised PVC (UPVC) pipes and fittings for pressure applications.
- AS/NZS 2053 - Conduits and fittings for electrical installations.
- AS 3000 - Electrical Installation - Buildings, Structures and Premises (known as the SAA Wiring Rules)).

(c) Other Publications

Australian Telecommunications Authority (AUSTEL) Standards – Customer Premises Cabling Manual

**Other
Publications**

MATERIALS

C303.04 GENERAL

All pipes, fittings and pits shall not be placed in position until the Constructor has produced documentary evidence to the Developer's Representative that the components conform to the requirements of this Specification. This action constitutes a **HOLD POINT**. The Developer's Representative's approval of the documentary evidence is required prior to the release of the hold point.

HOLD POINT

The Constructor shall provide documentary evidence to the ARC Representative and/or Developer's Representative (for Developer Infrastructure Works) at least two (2) working days prior to the commencement of the installation that all service pipes, fittings and pits conform to the requirements of this Specification.

Process Held: Installation of the service pipe, fittings and pits.

Hold Point

C303.05 CONDUITS

Conduits and conduit fittings for all electrical cabling shall be category 'A' orange coloured heavy duty rigid UPVC manufactured in accordance with *AS/NZS 2053* and with solvent welded joints. All conduits shall be of the sizes shown on the approved design drawings.

Conduits and conduit fittings for all telecommunications cabling shall be Class 12 white coloured UPVC manufactured in accordance with *AS 1477* and with solvent welded joints. All conduits shall be of the sizes shown on the approved design drawings.

C303.06 JUNCTION PITS

Electrical junction pits shall be precast in polymer concrete with 'Electricity' impressed in the lid to the requirements of the local Electricity Supply Authority.

Telecommunication pits shall be precast in glass reinforced concrete with the relevant telecommunication company's symbol impressed in the lid to the requirements of the relevant telecommunication company.

C303.07 CONCRETE FOOTINGS

Concrete footings for street lighting columns shall be 20MPa compressive strength in accordance with the requirements of *C271 – Minor Concrete Works*.

C303.08 ANCHOR BOLTS

Anchor bolt assemblies to be cast into street lighting column footings shall be supplied and installed by the Constructor in accordance with the requirements of the local Electricity Authority.

CONSTRUCTION

C303.09 LAYING OF CONDUIT

(a) Roadway Crossings

The conduits shall be installed where shown on the approved design drawings after construction of earthworks to subgrade level. The grade of the conduit shall be such as to provide a minimum cover over the conduit of 400mm to the top of select subgrade level under pavement and shoulders.

Location

The conduit shall be laid on a straight grade and line, in a trench not more than 300mm wide and on a bed of compacted sand of 50mm minimum thickness. Backfill over the conduit shall be compacted so that the relative compaction as determined by AS 1289.5.4.1 is not less than 100%.

Draw wire shall be provided in all conduits.

Draw Wire

A mark shall be made in the face of kerb on both sides of the road indicating the location of the conduit crossing. The mark shall consist of the letter E for electrical or T for telecommunications, as appropriate, routed into the concrete and at minimum 75mm high.

Markings

Where kerb construction has not yet commenced, temporary timber post markers shall be installed at the conduit crossings so that markings in the face of kerb can be made at the correct locations at the time of kerb construction.

(b) Other Locations

The conduit shall be laid on a straight grade and line and in normal trench conditions on a bed of compacted sand 50mm minimum thickness. The width of trench shall not exceed 300mm and the minimum cover over the conduit to finished surface level shall be 300mm. Backfill over the conduit shall be compacted so that the relative compaction as determined by AS 1289.5.4.1 is not less than 95%.

Draw wire shall be provided in all conduits.

Draw Wire

C303.10 JUNCTION PITS

Junction pits shall be installed at locations shown on the approved design drawings.

Locations

All junction pits shall be installed firmly in the ground on a drainage bed of 5mm nominal size screened aggregate of minimum thickness 150mm. All conduit connections to junction pits shall be made waterproof by bitumastic sealant.

A 50mm diameter UPVC drain shall be provided in each junction pit. The drain shall be graded to a stormwater drainage pit or discharge through an embankment batter.

Drainage

C303.11 FOOTINGS FOR STREET LIGHTING COLUMNS

The Constructor shall construct concrete footings at the locations for street lighting columns shown on the approved design drawings.

Excavation for footings shall be neatly cut from solid material. Excavated material shall be disposed of at locations approved by the ARC Representative and/or Developer's Representative (for Developer Infrastructure Works).

Excavation

Footings shall be constructed to the dimensions and details as shown on the approved design drawings. The anchor bolt assembly shall be accurately located and firmly supported.

Dimensions

Concrete and reinforcement shall be supplied and placed in accordance with the requirements of *C271 – Minor Concrete Works*.

Concrete shall not be placed until the formwork and anchor bolt assembly location has been approved by the ARC Representative and/or Developer's Representative (for Developer Infrastructure Works). This action constitutes a **HOLD POINT**. The ARC Representative and/or Developer's Representative (for Developer Infrastructure Works) approval of the formwork and anchor bolt assembly is required prior to the release of the hold point.

Concrete Placement

HOLD POINT

The Constructor shall present the formwork and anchor bolt assemblies for inspection by the ARC Representative and/or Developer's Representative (for Developer Infrastructure Works) at least two (2) working days prior to the placement of concrete.

Process Held: Placement of concrete.

Hold Point

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