

***COFFS HARBOUR CITY COUNCIL***



**DEVELOPMENT SPECIFICATION  
DESIGN**

***1391 Service conduits***

***Version 1      01 January 2009***

**1391 SERVICE CONDUITS****1 SCOPE AND GENERAL****1.1 SCOPE**

The work to be executed under this worksection includes the supply of materials and the installation of electrical and telephone conduits, pits and footings for streetlighting columns in accordance with the Worksection and Drawings.

The Worksection excludes the installation of wiring, equipment and streetlighting columns

**1.2 QUALITY**

Requirements for quality control and testing, including maximum lot sizes and minimum test frequencies, are given in 0161 *Quality (Construction)*.

**1.3 REFERENCED DOCUMENTS**

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

**Worksections**

0161 *Quality (Construction)*

0310 *Minor concrete works*

**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/NZS 1477 PVC pipes and fittings for pressure applications

AS/NZS 2053 series Conduits and fittings for electrical installations

AS/NZS 3000 Wiring Rules

Australian Telecommunications Authority (AUSTEL) Standards

Customer Premises Cabling Manual

**1.4 ELECTRICITY**

Electrical conduits and pits shall be installed in accordance with AS/NZS 3000 and the Service and Installation Rules of the local electricity supply Authority.

**1.5 TELEPHONE**

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

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

**2 MATERIALS****2.1 GENERAL**

All pipes, fittings and pits shall not be placed in position until the Contractor has produced documentary evidence to the Superintendent that the components conform to the requirements of this Worksection.

This action constitutes a HOLD POINT.

The Superintendent's approval of the documentary evidence is required prior to the release of the hold point.

## 2.2 CONDUITS

### Electrical

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 series and with solvent welded joints.

All conduits shall be of the sizes shown on the Drawings.

### Telephone

Conduits and conduit fittings for all telephone cabling shall be Class 12 white coloured UPVC manufactured in accordance with AS/NZS 1477 and with solvent welded joints.

All conduits shall be of the sizes shown on the Drawings.

## 2.3 JUNCTION PITS

### Electrical

Electrical junction pits shall be precast in polymer concrete with 'Electricity' impressed in the lid, or equivalent approved by the Superintendent, to the requirements of the local Electricity Authority.

### Telephone

Telephone pits shall be precast in glass reinforced concrete with the relevant telephone Company's symbol impressed in the lid, or equivalent approved by the Superintendent, to the requirements of the relevant telephone Company.

## 2.4 CONCRETE FOOTINGS

### Concrete

Concrete footings for street lighting columns shall be 20 MPa compressive strength in accordance with the requirements of 0310 *Minor concrete works*.

## 2.5 ANCHOR BOLTS

Anchor bolt assemblies to be cast into streetlighting column footings shall be supplied as a Principal supplied (TBS) item.

## 3 CONSTRUCTION

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### 3.1 LAYOUT OF CONDUIT

#### Roadway crossings

Layout of conduit at railway crossings shall comply with the following:

- Minimum cover—The conduits shall be installed where shown on the Drawings or as directed by the Superintendent 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 400 mm to the top of select subgrade level under pavement and shoulders.
- Laying conditions—The conduit shall be laid on a straight grade and line, in a trench not more than 300 mm wide and on a bed of compacted sand of 50 mm 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—Draw wire shall be provided in all conduits.
- Marks in kerb—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 telephone, as appropriate, routed into the concrete and at minimum 75 mm high.
- Temporary markers—Where kerb and gutter 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 and gutter construction.

#### Other locations

Layout of conduit at other locations shall comply with the following:

- Laying conditions—The conduit shall be laid on a straight grade and line and in normal trench conditions on a bed of compacted sand 50 mm minimum thickness. The width of trench shall not exceed 300 mm and the minimum cover over the conduit to finished surface level shall be 300 mm.

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—Draw wire shall be provided in all conduits.

### **3.2 JUNCTION PITS**

#### **Location**

Junction pits shall be installed at locations shown on the Drawings or as directed by the Superintendent.

#### **Installation method**

All junction pits shall be installed firmly in the ground on a drainage bed of 5 mm nominal size screened aggregate of minimum thickness 150 mm.

All conduit connections to junction pits shall be made waterproof by bitumastic sealant or other method approved by the Superintendent.

#### **Drain**

A 50 mm 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.

### **3.3 FOOTINGS FOR STREET LIGHTING COLUMNS**

#### **Location**

The Contractor shall construct concrete footings at the locations for street lighting columns shown on the Drawings or as directed by the Superintendent.

#### **Excavation**

Excavation for footings shall be neatly cut from solid material. Excavated material shall be disposed of at locations approved by the Superintendent.

#### **Dimensions**

Footings shall be constructed to the dimensions and details as shown on the Drawings.

#### **Anchor bolt assembly**

The anchor bolt assembly shall be accurately located and firmly supported.

#### **Concrete specification**

Concrete and reinforcement shall be supplied and placed in accordance with the requirements of 0310 *Minor concrete work*.

Concrete shall not be placed until the formwork and anchor bolt assembly location have been approved by the Superintendent.

This action constitutes a HOLD POINT.

The Superintendent's approval of the formwork and anchor bolt assembly is required prior to the release of the hold point.

## **4 MEASUREMENT AND PAYMENT**

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### **4.1 MEASUREMENT**

Payment shall be made for all activities associated with completing the work scheduled in this Specification on a schedule of rates basis in accordance with Pay Items 1391.1 to 1391.3 inclusive.

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

If any item, for which a quantity of work is listed in the Schedule of Rates, has not been priced by the Contractor, it shall be understood that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

Concrete and reinforcement for footings is measured and paid in accordance with this specification and not in 0310 *Minor concrete works*.

### **4.2 PAY ITEMS**

#### **1391.1 Supply and lay UPVC conduit**

The unit of measurement shall be the linear metre of conduit installed.

A separate unit rate shall be included in the Schedule of Rates for each size and type of conduit.

The schedule rate shall be inclusive of the supply of conduit and bends, excavation, laying of conduit in trench or structure, backfilling, the provision of draw wire and connection to junction pits.

**1391.2 Junction pits**

The unit of measurement shall be per 'each' pit installed.

A separate unit rate shall be included in the Schedule of Rates for each type of junction pit.

The schedule rate shall be inclusive of the supply of the junction pits, excavation, installation, backfilling and drain from pit.

**1391.3 Concrete footing for street lighting columns**

The unit of measurement shall be per 'each' footing installed.

A separate unit rate shall be included in the Schedule of Rates for each type of footing.

The schedule rate shall be inclusive of all work and materials required for the construction of the footing including excavation, formwork, concrete reinforcement and installation of the supplied anchor bolt assembly.