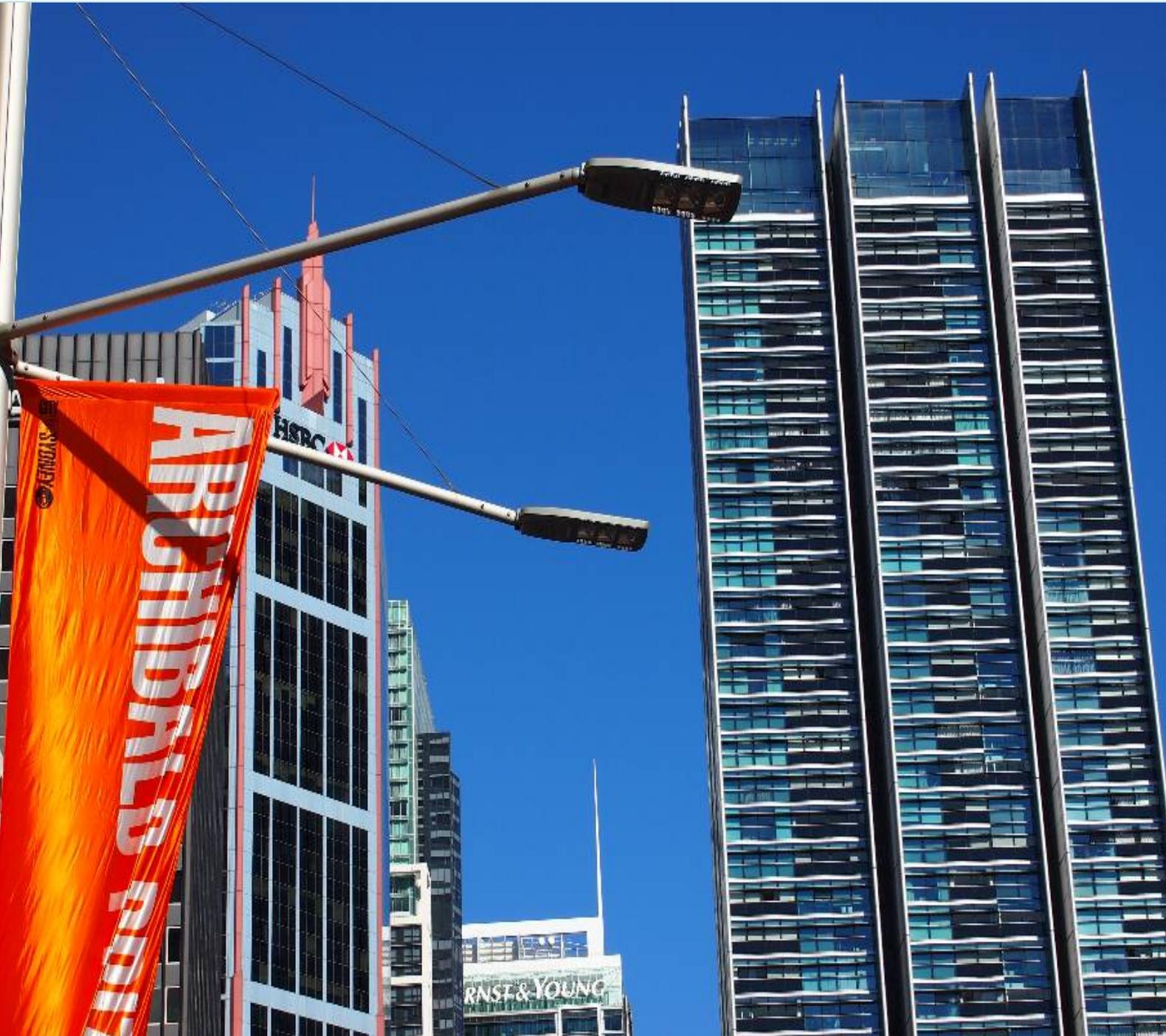


# A5: Street Lighting Design

City of Sydney  
Town Hall House  
456 Kent Street  
Sydney NSW 2000

## Design



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## 5.1 Scope:

The Specifications sets out the Lighting & Electrical Design brief, Technical requirements, design approval process, review of designs and installation requirements for carrying out Lighting & Electrical designs for Public domains, Shared Pathways, Main roads, Parks or under City's LGA.

This specification shall be applied for all lighting & electrical designs are required to be done for the City Of Sydney.

### 5.1.1 Australian Standards:

**Lighting & Electrical design specifications must not be limited to this document but also needs to comply with below relevant Australian standards as well as with City's B8 Street Lighting.**

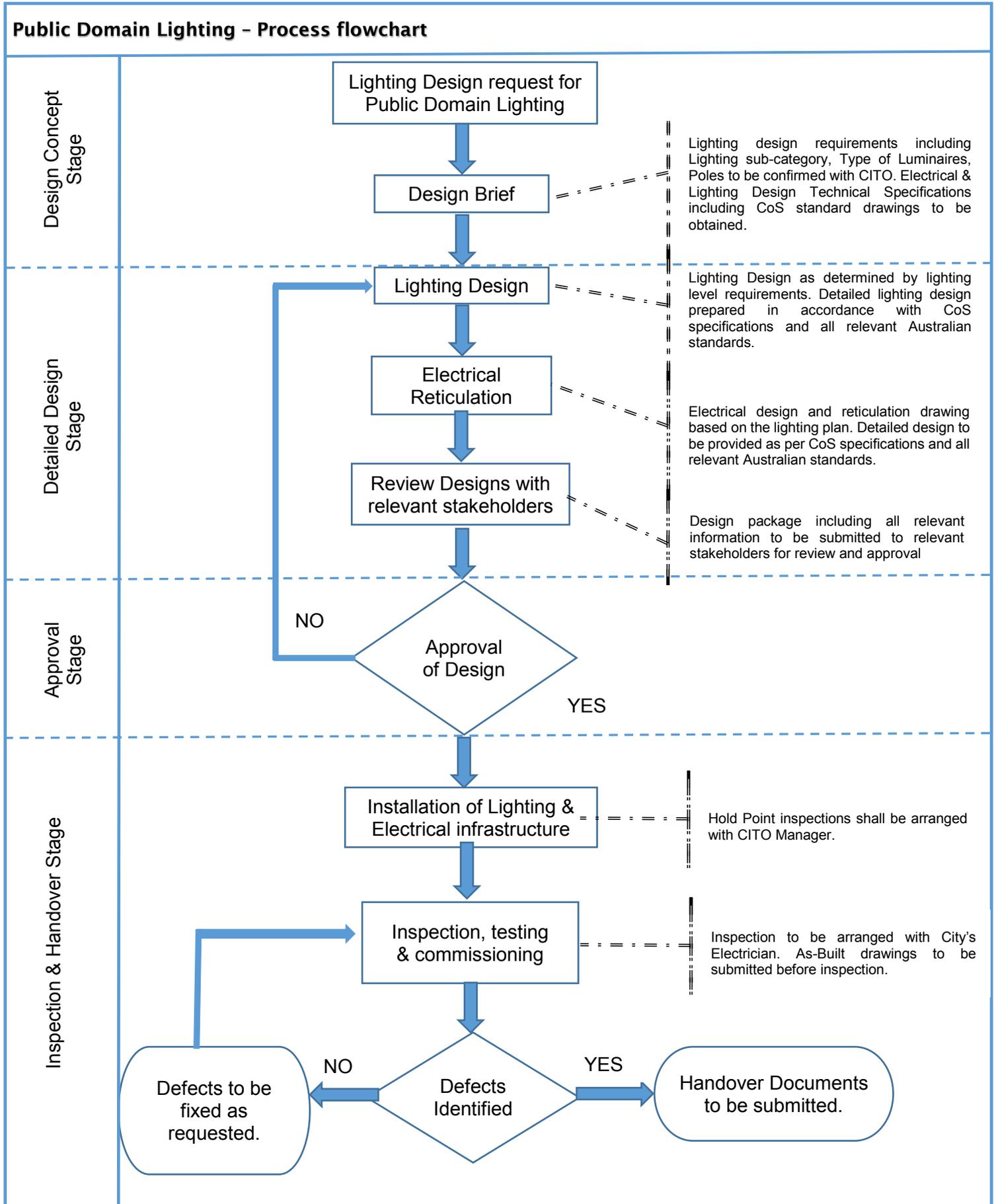
- AS/NZS 1158 Part 1 to 6 - Lighting for roads & Public spaces
- AS 4282: Control of the obtrusive effects of Outdoor lighting.
- Service and Installation Rules of New South Wales.
- AS/NZS 3000 :Electrical Installations (Known as the Australian / New Zealand Wiring Rules)
- AS/NZS 3008: Electrical Installations – selection of cables. Cables for alternating voltages up to and Including 0.6/1kV
- AS/NZS 3100: Approval and test Specification-General requirements for electrical equipment.
- AS/NZS 3017: Electrical Installations—Verification guidelines.
- IESNA LM79-08, LM80-08 and TM21-11
- AS 3439 :Low-voltage Switchgear

### 5.1.2 Acceptable Lighting Design Program:

City Of Sydney shall accept Lighting design submissions, using below Lighting programs:

- AGi32.
- Perfect Lite - Road & Outdoor Lighting Design Software.

## 5.2 Public Domain Lighting – Process Flowchart.



## 5.3 Lighting Design

### 5.3.1 General

Lighting schemes designed and installed such as to avoid any sort of unwanted light spill and light pollution. The overall Lighting scheme must provide maximum safety and shall not be overdesigned. AS/NZS 1158 clearly specifies, the choice of whether to install a road lighting scheme in compliance with this standard and, if so, which subcategory of lighting is appropriate, rests with the road controlling authority. The lighting designer shall confirm the lighting level requirements, before commencing any lighting design.

### 5.3.2 Lighting Designer

Lighting design shall be undertaken by a suitably qualified and a competent practising lighting designer. Must be conversant with Australian local codes for outdoor lighting. Designer must provide a lighting design and statement confirming it complies with requirements of the standard and sign off. It will be the designer's responsibility to ensure that the lighting scheme meets all the requirements of City Of Sydney and relevant Australian requirements.

### 5.3.3 Luminaires

City Of Sydney owned and maintained luminaires shall be City Of Sydney Approved Standard LED Luminaires. For more information please refer Sydney Lights. If a non-standard luminaires are proposed, approval must be provided and are required to submit Datasheet, photometric files, Power consumption, CCT, Supplier, Compliance as per AS1158.6, Electrical certification AS/NZS 3100, NATA test reports to justify photometric and warranty period.

### 5.3.4 Lighting Category

Lighting design requirements to be confirmed with City before commencing any lighting design.

### 5.3.5 Category V Lighting

Lighting which is applicable to roads on which the visual requirements of motorists are dominant E.g. traffic routes. Subcategories V1 to V5

Design the Lighting to comply with the Light Technical Parameters (LTP) of AS/NZS1158.1 Road Lighting –Vehicular traffic (Category V) lighting.

### 5.3.6 Category P Lighting—Local Roads / Cycleways / Pathways

Lighting which is applicable to roads on which the visual requirements of pedestrians are dominant e.g. local roads and to local area traffic management devices. Also lighting which is applicable to Outdoor public area, other than roads, where the visual requirements of pedestrians are dominant, e.g. plaza, parks, shopping precincts. Subcategories range from P1 to P12. Design the Lighting to comply with the Light Technical Parameters of AS/NZS1158.3 Road Lighting –Pedestrian area (Category P) lighting.

### 5.3.7 Pedestrian (Zebra) Crossings

Lighting requirements shall comply with LTP as specified in AS/NZS 1158.4. Light spill and glare must be minimized. It must comply with PX1 or PX2 category unless otherwise specified.

## 5.4 Lighting Design Review

Lighting design needs to be submitted to Technical services team of City Of Sydney for review and provide an approval, prior to installation of luminaires on site. The lighting design and layout shall be as per the requirements specified for Lighting design documents and Design drawings.

### 5.4.1 Lighting Design Documents

The following Lighting design documents shall be submitted for review and approval:

- Lighting Design Drawing.
- Records of any non-compliant design elements.
- Name of the computer program used.
- Details of the Road Surface Reflection assumed in Category V design calculations, if any.

### 5.4.2 Lighting Design Drawing

- **Luminaire Schedule & Description** shall be provided with below details:
- Manufacturer, Name of Luminaire, Power Consumption (Watts), Distribution (Optics) type, Colour Temperature, Outreach arm dimensions, Pole Type, Mounting Height to luminaire optical centre, Pole Offset, Lamp/Luminaire Lumens, Light Loss Factor (LLF) & Luminaire/Pole colour.
- **Calculation Summary** shall indicate all relevant Light Technical Parameters and compliance as per AS/NZS 1158 for Category V & P lighting respectively.
- Lighting Calculation points for Horizontal/Vertical illuminance shall comply with the requirements as specified in AS/NZS1158.2.
- Provide luminaire labels with mounting height.
- Provide obtrusive lighting calculations on adjacent residential properties as per Australian standards, where required.
- Indicate luminaire orientation where it is not shown by symbol.
- Highlight all areas of non-compliance.

### 5.4.3 Lighting Layout Drawings

- All engineering drawings shall be legible, clear, readable and complete. They must clearly illustrate the proposal and enable both assessment of compliance with this document and Accurate construction.
- A locality diagram giving the overall layout and location of works. Indicate all street names.
- A North symbol to be provided on the drawing.

- A luminaire schedule which includes :Manufacturer, Name of Luminaire, Power Consumption (Watts), Distribution (Optics) type, Colour Temperature, Outreach arm dimensions, Pole Type, Mounting Height to luminaire optical centre, Pole Offset, Lamp/Luminaire Lumens, Light Loss Factor (LLF) & Luminaire/Pole colour.
- The lighting design details including: lighting classification and subcategory that the scheme has been designed to meet.
- Electronic drawings must be prepared in an industry standard format suitable for later addition of as-built information.
- Drawings can be supplied in electronic format as DWG & PDF formats.

#### **5.4.4 Light Pole /Mounting/ Footings**

- Specifications for the poles including type of poles/colour etc. must be obtained from council during the design stage.
- Shop drawings of the poles must be submitted to council for review and approval prior to manufacture.
- Footing design certified by a practising structural engineer shall be submitted to council for review and approval.
- Mount type shall be Ragbolt Assembly with standard pole baseplate. Hold Down (HD) bolts shall not be exposed above the ground, please refer Annexure 5.1 Section A-A for details.

#### **5.5 Pole Set Back**

- Minimum Pole offset shall be 600 mm from the face of the kerb, unless otherwise specified.
- Minimum Pole offset at intersections shall be 1000 mm.

#### **5.6 Pole Orientation**

Unless otherwise specified, luminaires shall:

- Oriented at 90 degrees to the road /pathway
- Upcast angle "0" degrees

#### **5.7 Temporary Lighting**

- If the existing luminaires are to be removed for any construction activity, must provide a temporary lighting design for review and approval. Temporary lighting shall comply with AS/NZS 1158.
- Unless and until the temporary lights are up and running, existing lights shall not be removed or decommissioned.
- Footing designs certified

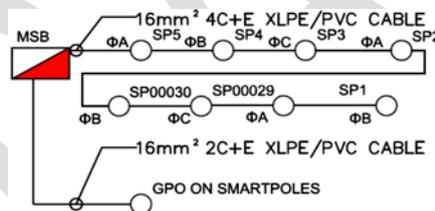
## 5.8 Electrical Reticulation Design

### 5.8.1 General

- Electrical design shall comply with AS/NZS 3000, Service and Installation Rules –NSW & Ausgrid requirements.
- All Electrical designs shall be undertaken by a competent practising Electrical consultant/s.
- Electrical design shall be submitted to City's Technical services team for review and approval before commencing any installation works on site.

### 5.8.2 Power Supply, Electrical Circuits & Reticulation

- Point of Supply can be determined in consultation with City's Electrical team to determine whether the lights can be powered from existing MSB or requires New Electrical Connection.
- If appropriate new meter connection is required, point of supply location shall be organised with Ausgrid directly.
- Consultants are required to inspect the existing Electrical Infrastructure identify the source of supply existing electrical cable, existing Ausgrid Street Light network, Existing Main SwitchBoard, existing circuit breakers, spare capacity and provide a summary of existing Electrical infrastructure.
- If a Three phase power scheme is adopted then circuits shall be designed to balance the load across all phases. All the luminaires are connected in a manner that adjacent luminaires are not on same phase.
- Electrical Consultant shall provide electrical schematics. Please see example as below.



- Consultant to provide below information:
- Existing Current Maximum Demand, Maximum Demand Calculation, Single line diagram of the MSB, Electrical Cable size & % Voltage drop/fault loop impedance Calculation using Powerpack or PowerCad. Detailed Electrical reticulation plan indicating Conduit depth, Pits, cable size / type etc.
- Details on Conduit arrangements, Electrical Pits and footing designs to be provided for approval prior to carrying out any construction activity. Footing designs shall be certified by a competent practising structural engineer.
- All cabling installed underground for Public lighting reticulation shall be enclosed in a 63mm Dia Heavy Duty (HD) PVC conduits, unless otherwise requested. No cables shall be directly buried. Electrical warning PVC marker tape shall be installed above all conduits used for reticulation.
- Depth of the Electrical conduits shall comply with requirements as per details on Annexure 4 of this document.

### 5.8.3 Cable Routes

The designer shall undertake site visits to assess the local conditions to decide the cable route.

- Accessibility – All cabling must be wholly within road reserves or public spaces or in the easement to be provided.
- The cable route selection shall aim to reduce sharp bends.
- There shall be no joints in LV cables.
- All LV cables shall be terminated in cabinets and terminal box at the base of pole.
- Surface layer to be assessed for excavation and reinstatement – soil, road crossing, concrete, etc.
- Underground layer to be assessed for ease of excavation – potholing along the route as required confirming full trench depth is achievable.
- Install conduits along the most direct route between the turret/cabinet and column.
- Conduits shall cross under footpaths and roads at right angles where possible so that the reinstatement and length of cable is minimal.
- Dial Before You Dig to check clearances from other utility services (gas, water and communication reticulation)

#### 5.8.4 Cable Type, Terminations & Protection

- Main Underground cables shall be single phase or three phase, 2C or 4C Cu/PVC/ XLPE + Earth, 0.6/1kV. Minimum cable size shall be 16 Sq.mm. All cables shall have type V75 or V90 insulation and shall have stranded copper conductors.
- Main cables shall be terminated at the base of each poles. A dedicated 10 A MCB + 30mA RCD shall be installed at the base of each column for the luminaire supply. Please refer figure A for details.
- All the cables from the base of the poles to the luminaires shall be minimum of 2C+E -2.5 Sq.mm Cu/PVC/PVC.
- Consultants to provide detailed drawing indicating the above arrangement clearly.
- The number of Circuits shall suit circuit loading and voltage drop calculations.
- The insulation of the cables shall be coloured as shown in table below:

Circuit	Type	Colour
Three phase circuits	A Phase	Red
	B Phase	White
	C Phase	Blue
	Earth Conductors	Green and Yellow
	Neutral Conductors	Black

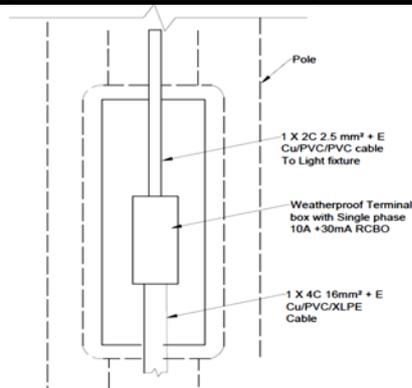


FIGURE A

### 5.8.5 Electrical Pits

- Pits shall be located adjacent to each pole unless otherwise specified.
- Pits are required at every crossings & horizontal / vertical changes of direction of conduits.
- Pits shall be located to minimize water ingress and must flush with the finished surface.
- Please refer Annexure 6 for details.

### 5.9 Main Switchboard (MSB)

- Please refer Annexure 3.1 & 3.2 for City's standard drawing for single / three phase MSB size and details.
- Shop drawings for MSB must be provided for Council review and approval before manufacture.
- If non Standard MSB is required, provide shop drawings for review and written approval must be obtained before manufacturing and installing MSB.

### 5.10 LIGHTING CONTROL SYSTEM

- All functional lighting to be supplied on its dedicated lighting circuit and controlled by PE cell/time clock. PE cell must be installed on a Luminaire or pole closer to the MSB.
- No other type of Control system apart from specified above must be used for functional lighting.
- Dynamic / Decorative Lighting— Lighting control system must be approved by Technical services Electrical team prior to processing.
- Submit drawing showing mounting details for decorative luminaires and location of all electronic drivers and control equipments.

### 5.11 INSTALLATION, TESTING & INSPECTION

- Installation of all works shall be as per the drawings approved by City's Technical services.
- Any deviation from the approved drawings, shall be reported back to City's technical services and requires to obtain written approval on deviation before commencing any works.
- At the practical completion of installation works, contractor to organise an inspection date / time and liaise with City's Electrician.
- City's Electrician will be available on site to carry out visual site inspections and witness all the electrical test on site.
- Electrical contractor to carry out all the Electrical test required as per AS/NZS 3017. Electrical contractor needs to organise all relevant tools / equipments before commencing any electrical test on site.
- CoS Standard ABLOY padlocks (2) are to be installed to the MSB cabinet.
- Contractor to Supply & install Asset ID labels. Please refer Annexure 9 for details.
- A laminated copy of As-Built drawing & SLD to be attached on the inner side of the Cabinet door
- City's representative will advise of the defect list, if any. Upon receiving the contractor must fix the issues and arrange for final inspection.
- Contractor shall provide As-built drawings before arranging for final inspection. Details for As-built as specified in section 8 of this document.

- Contractor also needs to sign off City's "Details of New Lighting installation inspection, test and completion certificate" as per Annexure 1 of Sydney Streets Technical Specifications Part B8 –Street Lighting.

## 5.12 HOLD AND WITNESS POINTS

- Please refer section 8.6 of B8 Street Lighting – Sydney Streets Technical Specifications.

## 5.13 AS-BUILT DRAWINGS REQUIREMENTS

Below information shall be provided on the As-Built drawings in AutoCAD & PDF format:

- Drawings in AutoCAD & PDF format stamped "AS-BUILT" showing Pole locations with GPS Coordinates and offset dimensions as per site reference points. Plans must be provided in hard copy and electronic format- based on Australian Height Datum (AHD) and Map Grid of Australia (MGA) orientation, Zone 56.
- Pole schedule to include footing type, Asset ID label numbers, pole height, pole offset, pole type, luminaire details, outreach arm length, luminaire mounting height, Pole colour, luminaire colour etc.
- Drawing shall indicate Electrical conduits layout / PITS/ Cable runs per conduit including depths, offset & circuit labels as installed on site for the complete installation. Cables & Conduit size to be specified on the drawing as well.
- Location of Main SwitchBoard (MSB) and feeder number from where MSB is feed from or Ausgrid Pole number/location in case of Special Small Services (SSS) supply.

## 5.14 HAND OVER DOCUMENTS

Below documents needs to be submitted as part of hand over

- As built drawings as per requirements specified in section 8 above.
- Certified Structural footing designs to suit site specific underground obstructions and soil conditions.
- Electrical contractors must issue Certificate of Compliance for Electrical Work (CCEW) form for all Electrical Installation works. CCEW forms are available from NECA. It is essential that the installation work complies with AS/NZS3000 Wiring Rules and any other relevant standard and is tested as required and certified as being safe.
- Electrical design & installation certification from the electrical consultant engaged on the project.
- Structural engineers' certification for footing construction inspection/supervision.
- Lighting engineers' certification confirming as installed lighting complies with design intent.
- Operation & Maintenance manual.

## Annexure 1

### LIGHTING DESIGN BRIEF AND CERTIFICATE

<b>For Office Use Only</b>	
<b>CoS Design Requirements:</b>	<b>Scheme:</b>
<b>DA Number:</b>	<b>Signed by City Infrastructure Lighting Representative:</b>

Location	Lighting Category	Column Type	Lantern Type	Lamp Source

The following sections to be completed by the **ACCREDITED LIGHTING DESIGNER** and approved by the City of Sydney Council, City Infrastructure **PRIOR** to any work commencing:

<b>Location</b>			
<b>Lighting Category</b>			
<b>Computer package used</b>			
<b>Mounting Height (m)</b>			
<b>Column arrangement</b>			
<b>Overhang (m)</b>			
<b>Effective Width (m)</b>			
<b>Lantern Type</b>			
<b>Lamp Type &amp; Wattage (W)</b>			
<b>Lamp Design lumens</b>			
<b>Maintenance Factor</b>			
<b>Required Maintained Ave</b>			
Calculated Maintained Ave			
<b>Required (Up maint) or (Uo)</b>			
Calculated (Up maint) or (Uo)			
		<input type="checkbox"/>	
<b>Required Min (Eh maint)</b>			
Calculated (Eh maint)			
<b>Required (Ev maint)</b>			
Calculated (Ev maint)			
<b>Required Min (UL)</b>			
Calculated (UL)			
<b>Required Max Ti</b>			
Calculated (Ti)			
<b>Required Min (Es)</b>			
Calculated (Es)			

<b>Underground Cable size:</b> mm2		<b>Cable Type:</b>	
<b>Calculated Volt drop:</b> V		<b>Calculated Loop Impedance of each leg:</b> Ω	
<b>Overcurrent Protective Device of Outgoing</b>		<b>Rating:</b> A	
<b>Circuit: AS</b>			
<b>Calculated Short Circuit current of each leg:</b> KA			
<b>Maximum Disconnection time 0.4 seconds:</b>			
<b>Mains Switch: AS</b>	<b>Type:</b>	<b>Rating:</b>	<b>A</b>
<b>Number of Poles:</b>			
<b>Contactor/Relay type:</b>	<b>Rating:</b> A	<b>No. of Poles:</b>	
<b>Electronic Time Clock:</b>		<b>Type:</b>	
<b>Power Supply:</b> V		<b>Phases:</b>	
<b>Method of Earthing:</b>			

**NOTE:** All calculations to be shown on a separate sheet.

I/we being the person(s) responsible (as indicated by my/our signatures below) for the design of the Lighting/Electrical Installation, particulars of which are described on Page 1 and 2 of this form Certify that the said work for which I/we have been responsible is to the best of my/our knowledge and belief in accordance with the current Code of Practice for Lighting AS1158, City of Sydney current specification for the installation of public domain lighting and the Rules for Electrical Installations published in, AS3000, except for the departures, if any, stated in this certificate. The extent of the liability of the signatory is limited to the work described above as the subject of this certificate.

<b>For the design installation at:</b>	
<b>Name of Designer:</b>	<b>Position:</b>
<b>Company Name:</b>	
<b>Signature:</b>	<b>Date:</b>
<b>For and ON BEHALF of CLIENT:</b>	
<b>Address:</b>	

<b>For Office Use Only</b>	
<b>Checked By:</b> <small>(Name in BLOCK letters)</small>	<b>Position:</b>
<b>Signature:</b>	<b>Date:</b>

## Annexure 2

### DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST & COMPLETION CERTIFICATE.

All commissioning and pre-handover inspections are to be carried out by the **contractor and witnessed by an accredited representative from City of Sydney, City Infrastructure**. All completed forms are to be submitted to **The Manager, City Infrastructure and Traffic Operations, City of Sydney**.

#### VISUAL INSPECTION

Location:
Contractor:
Type of Installation: (e.g. public domain lighting or illuminated sign etc)
Date of Inspection:

#### STRUCTURAL INSPECTION

Mark  Satisfactory or  Unsatisfactory

On Completion:

<input type="checkbox"/>	1.	Location of Lighting Equipment as per Drawing
<input type="checkbox"/>	2.	Planting Depth/ Footing size of Lighting Equipment as per Specification
<input type="checkbox"/>	3.	Location of Cable as per Drawing
<input type="checkbox"/>	4.	Depth of Cable as per Specification
<input type="checkbox"/>	5.	Location of Road Crossing as per Drawing
<input type="checkbox"/>	6.	Depth of Road Crossing as per Specification
<input type="checkbox"/>	7.	Column footing as per Specification
<input type="checkbox"/>	8.	Verticality Correct
<input type="checkbox"/>	9.	Optical Orientation Correct

Mark  Satisfactory or  Unsatisfactory

On Completion:

1.	<input type="checkbox"/>	Correct termination of cables in the column, lantern and control gear
2.	<input type="checkbox"/>	Circuit conductors identified correctly
3.	<input type="checkbox"/>	Conductor size correct for normal operation (or as specified)
4.	<input type="checkbox"/>	Single pole switch or fuse in the phase conductor only
5.	<input type="checkbox"/>	Outer contact of ES lampholder is connected to the Neutral conductor
6.		Method of Protection against Direct Contact
	<input type="checkbox"/>	a) Insulation of live parts
	<input type="checkbox"/>	b) Barrier or enclosure
	<input type="checkbox"/>	c) Out of reach (overhead lines only)
7.		Method of Protection against Indirect Contact
	<input type="checkbox"/>	a) Presence of Protective Conductors
	<input type="checkbox"/>	b) Presence of main equipotential bonding conductor
	<input type="checkbox"/>	c) Presence of supplementary equipotential bonding conductor including doors of steel columns but excluding that of concrete columns
8.	<input type="checkbox"/>	Presence of Method of local isolation
9.	<input type="checkbox"/>	Fuse ratings correctly rated for their purpose
10.	<input type="checkbox"/>	Labelling in control pillar/switchboard enclosure of isolators and fuses
11.	<input type="checkbox"/>	Prevention of mutual detrimental influence. Proximity of non-electrical services (fences or safety barriers etc)
12.	<input type="checkbox"/>	Selection of equipment and protective measures appropriate to external influences
13.	<input type="checkbox"/>	Adequate access to installed equipment
14.	<input type="checkbox"/>	Presence of danger notices or other warning notices
15.	<input type="checkbox"/>	Presence of circuit diagrams enclosed within control pillars/switchboard enclosure
16.	<input type="checkbox"/>	Installation method of cables
17.	<input type="checkbox"/>	Deviation from the materials listed in the specification
18.	<input type="checkbox"/>	Other

## DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST & COMPELTION CERTIFICATE.

(All entries recorded on this sheet to be determined by measurement. All instruments must bear a current calibration label).

Date of Test: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**Instruments to be Used**

**Date when calibrated**

Voltmeter 240/415V

Ammeter 0-50 amp

Megger 500V

Loop Impedance Meter

Prospective Short Circuit Tester

**Control Pillar**

**Installation de-energised** (with all fuser carriers removed)

**Continuity of Protective Conductors**

**Polarity (Rph + Re):-**

Mark  Satisfactory or  Unsatisfactory

Circuit 1	$\Omega$	Circuit 1	<input type="checkbox"/>
Circuit 2	$\Omega$	Circuit 2	<input type="checkbox"/>
Circuit 3	$\Omega$	Circuit 3	<input type="checkbox"/>
Circuit 4	$\Omega$	Circuit 4	<input type="checkbox"/>

**Insulation Resistance**

**Insulation Resistance (column wiring)**

(Note Remove neutral conductor from PME system)

(All columns)

Circuit 1	P-N	$\Omega$
	P-E	$\Omega$
	N-E	$\Omega$

Circuit	Column No.	
	P-E	M $\Omega$
	N-E	M $\Omega$

Circuit 2	P-N	$\Omega$
	P-E	$\Omega$
	N-E	$\Omega$

Circuit	Column No.	
	P-E	M $\Omega$
	N-E	M $\Omega$

Circuit 3	P-N	$\Omega$
	P-E	$\Omega$
	N-E	$\Omega$

Circuit	Column No.	
	P-E	M $\Omega$
	N-E	M $\Omega$

Circuit 4	P-N	$\Omega$
	P-E	$\Omega$
	N-E	$\Omega$

Circuit	Column No.	
	P-E	M $\Omega$
	N-E	M $\Omega$

METHOD OF EARTHING:- TN-C-S

**Installation Energised**

(Measurements taken under load at cut-out incoming terminals)

Voltage at Origin \_\_\_\_\_ V  
 Prospective Short Circuit Current at Origin \_\_\_\_\_ KA  
 Loop Impedance at Origin \_\_\_\_\_ Ω  
 No. of Phases \_\_\_\_\_  
 Load at Origin \_\_\_\_\_ A

**Measured Load**

**Voltage at end of Circuit**

Circuit 1	A	Circuit 1	V
Circuit 2	A	Circuit 2	V
Circuit 3	A	Circuit 3	V
Circuit 4	A	Circuit 4	V

**Loop Impedance at end of each circuit**

**Prosp.Short Circuit Current at end of**

**Circuit**

Circuit 1	Ω	Circuit 1	KA
Circuit 2	Ω	Circuit 2	KA
Circuit 3	Ω	Circuit 3	KA
Circuit 4	Ω	Circuit 4	KA

I/We being the person(s) responsible (as indicated by my/our signature(s) below) for the inspection and test of the street lighting and associated electrical installation particulars of which are described on the attached appendices of this form certify that the said work for which I/we have been responsible is to the best of my/our knowledge and belief in accordance with City of Sydney current Specification for the Installation of Public Domain Lighting and the Rules for Electrical Installations (AS3000) except for departure, if any, stated in this certificate.

The extent of liability of the signatory is limited to the work described above as the subject of this certificate.

For the inspection and test of the installation at:	
Name: (BLOCK Letters)	Position
Licence No.:	
Company Name:	
Signature: (of Designer in BLOCK Letters)	Date
For and ON Behalf of:	
Address :	
Witnessed by (Name) (BLOCK Letters)	Position
Signature:	Date

Comments: \_\_\_\_\_



# Annexure 3.2

## STANDARD DRAWING FOR THREE PHASE MSB

### GENERAL SWITCHBOARD DETAILS & SCHEMATICS

**FRONT ELEVATION (WITH DOORS FITTED)**

**FRONT ELEVATION (WITH DOORS REMOVED)**

**SECTION A-A**

ITEMS	DESCRIPTION	REFERENCE	PART NO. QTY
SERVICE TRAYS	300mm x 75mm ALUMINIUM	STC-300-75-ALU-1	1
FRONT PANEL	FRONT PANEL WITH DOOR	STC-300-75-ALU-2	1
FRONT PANEL	FRONT PANEL WITHOUT DOOR	STC-300-75-ALU-3	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES	STC-300-75-ALU-4	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK	STC-300-75-ALU-5	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE	STC-300-75-ALU-6	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS	STC-300-75-ALU-7	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS	STC-300-75-ALU-8	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION	STC-300-75-ALU-9	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING	STC-300-75-ALU-10	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE	STC-300-75-ALU-11	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH	STC-300-75-ALU-12	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR	STC-300-75-ALU-13	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT	STC-300-75-ALU-14	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE	STC-300-75-ALU-15	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE AND TESTING	STC-300-75-ALU-16	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE AND TESTING AND APPROVAL	STC-300-75-ALU-17	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE AND TESTING AND APPROVAL AND MAINTENANCE	STC-300-75-ALU-18	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE AND TESTING AND APPROVAL AND MAINTENANCE AND SAFETY	STC-300-75-ALU-19	1
FRONT PANEL	FRONT PANEL WITH DOOR AND HINGES AND LOCK AND HANDLE AND KEYS AND LABELS AND VENTILATION AND WEATHER PROOFING AND WEAR SURFACE AND FINISH AND COLOUR AND WEIGHT AND COMPLIANCE AND TESTING AND APPROVAL AND MAINTENANCE AND SAFETY AND DOCUMENTATION	STC-300-75-ALU-20	1

**MINOR EQUIPMENT SCHEDULE**

**CONSTRUCTION NOTES:**

- 1. FLOOR MOUNTED, FRONT CONTROL, MOUNTED AT 1000mm
- 2. 200mm x 75mm STAINLESS STEEL, FINISH & WELDED VENTILATION BOTTLE CONSTRUCTION
- 3. 1.2mm THICK 316 STAINLESS STEEL
- 4. 1.2mm THICK 316 STAINLESS STEEL
- 5. 1.2mm THICK 316 STAINLESS STEEL
- 6. 1.2mm THICK 316 STAINLESS STEEL
- 7. 1.2mm THICK 316 STAINLESS STEEL
- 8. 1.2mm THICK 316 STAINLESS STEEL
- 9. 1.2mm THICK 316 STAINLESS STEEL
- 10. 1.2mm THICK 316 STAINLESS STEEL
- 11. 1.2mm THICK 316 STAINLESS STEEL
- 12. 1.2mm THICK 316 STAINLESS STEEL
- 13. 1.2mm THICK 316 STAINLESS STEEL
- 14. 1.2mm THICK 316 STAINLESS STEEL
- 15. 1.2mm THICK 316 STAINLESS STEEL
- 16. 1.2mm THICK 316 STAINLESS STEEL
- 17. 1.2mm THICK 316 STAINLESS STEEL
- 18. 1.2mm THICK 316 STAINLESS STEEL
- 19. 1.2mm THICK 316 STAINLESS STEEL
- 20. 1.2mm THICK 316 STAINLESS STEEL

**NOTES:**

- 1. MAIN ISOLATOR TO BE LOCATED IN THE ENERGY AUTHORITY SECTION.
- 2. BUS COMB TO BE FIXED SECURELY TO THE BUSBAR.

**E3 METER WIRING SCHEMATIC**

**SINGLE LINE DIAGRAM**

**PC CELL LIGHTING CONTROL SCHEMATIC DIAGRAM**

**ANTICOMPENSATION HEATER SCHEMATIC DIAGRAM**

### GENERAL SWITCHBOARD DETAILS & SCHEMATICS

**GENERAL SWITCHBOARD DETAILS & SCHEMATICS**

**GENERAL SWITCHBOARD DETAILS & SCHEMATICS**

Rev  
Date  
Approved

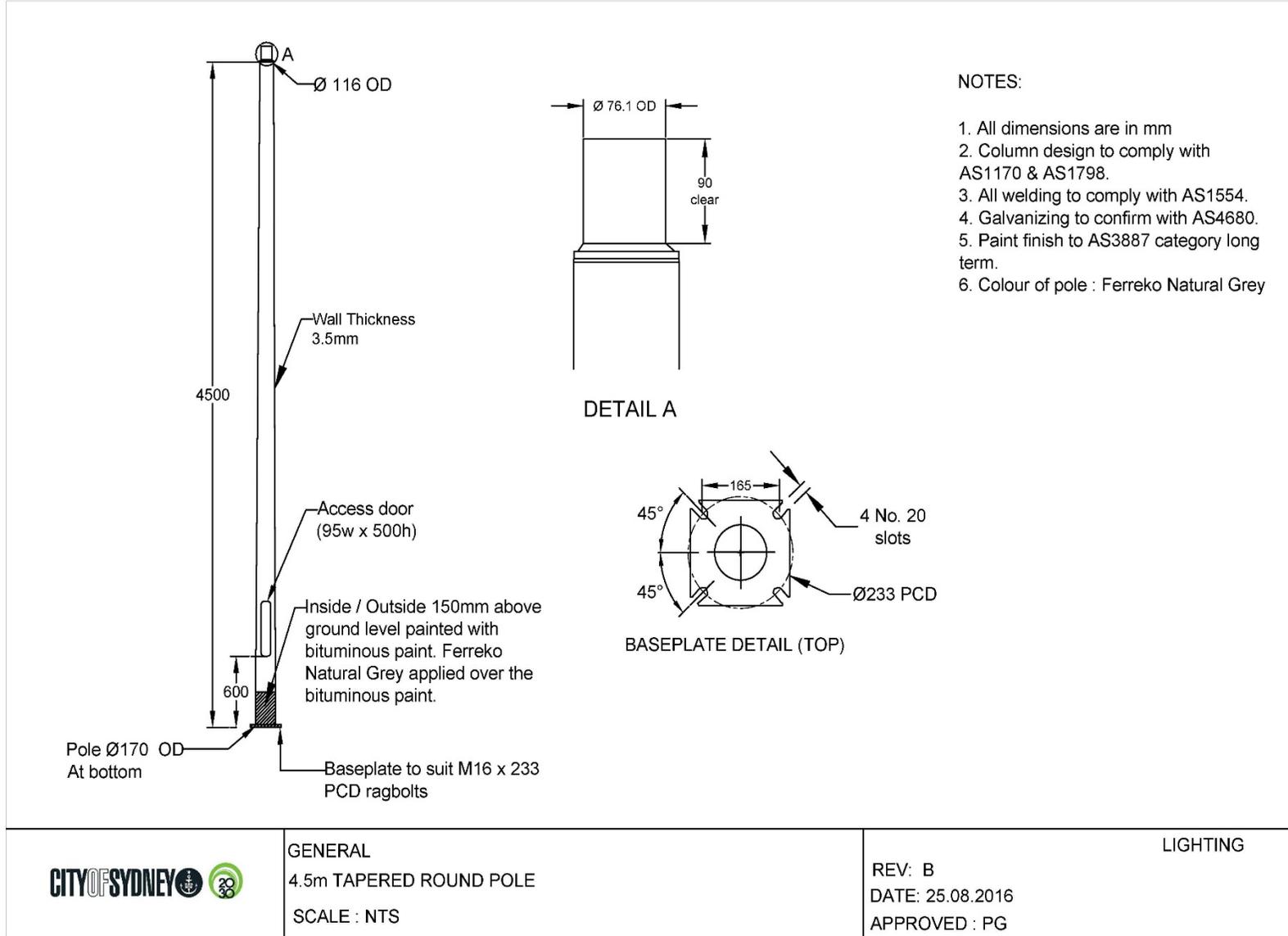
**LIGHTING**

C  
26.05.15  
PG

Dwg No.  
**5.1.3**

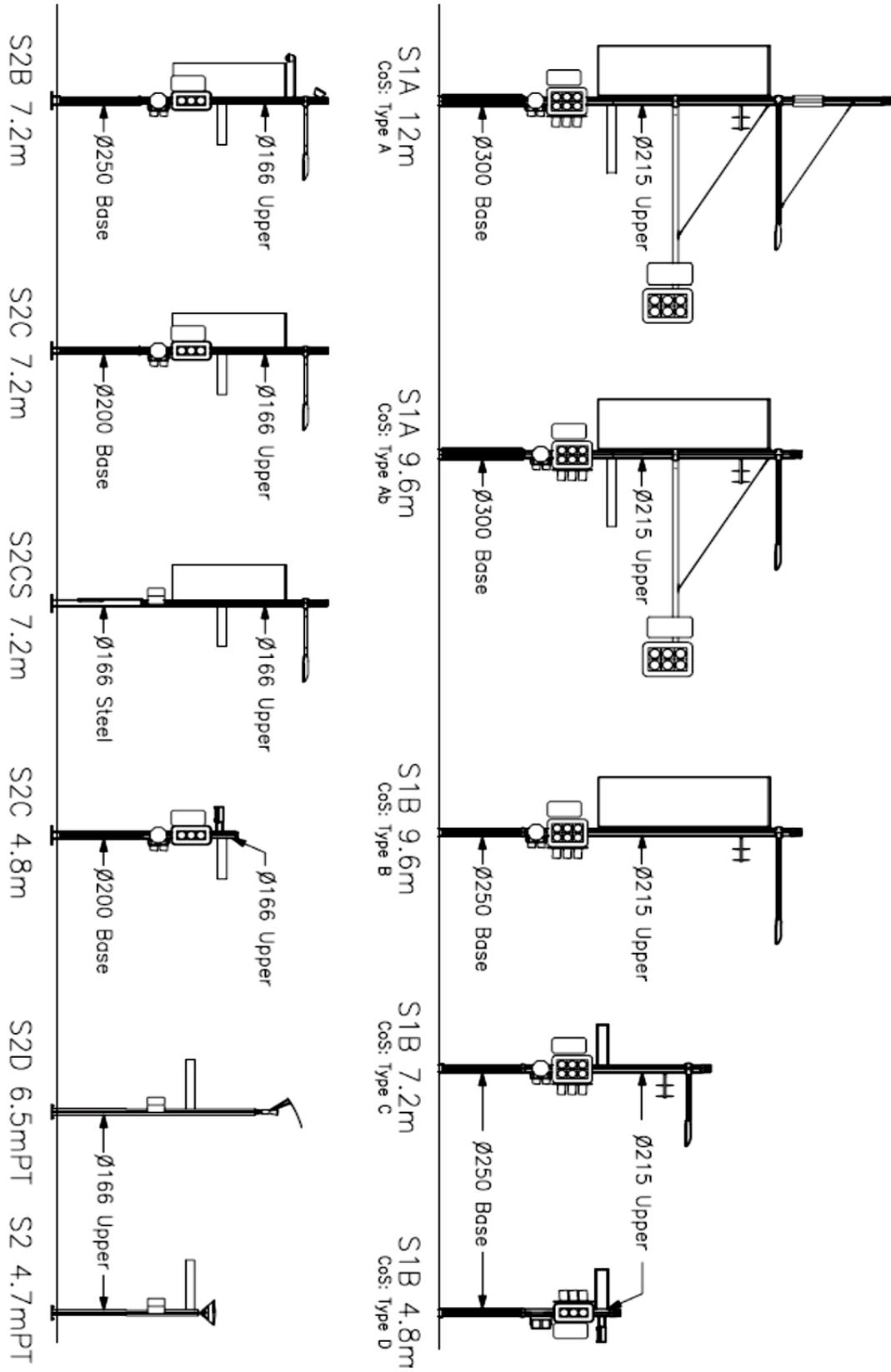
### Annexure 4.1

#### STANDARD DRAWING FOR TAPERED PEDESTRIAN POLES (4.5 M OR 5.5M)



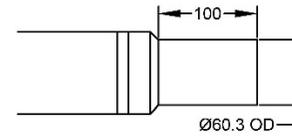
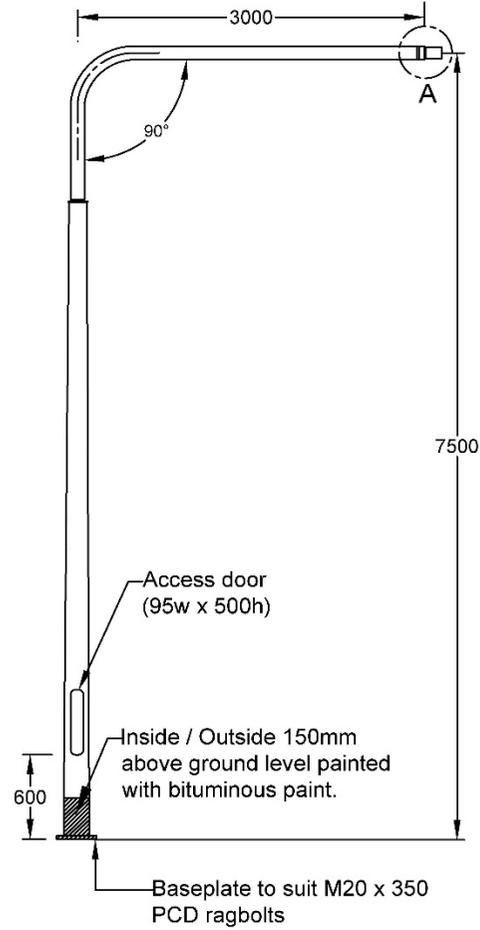
## Annexure 4.2

### STANDARD DRAWING FOR SMART POLES

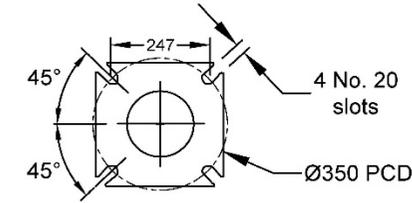


### Annexure 4.3

#### STANDARD DRAWING FOR GALVANISED STEEL STREET LIGHT POLES



DETAIL A



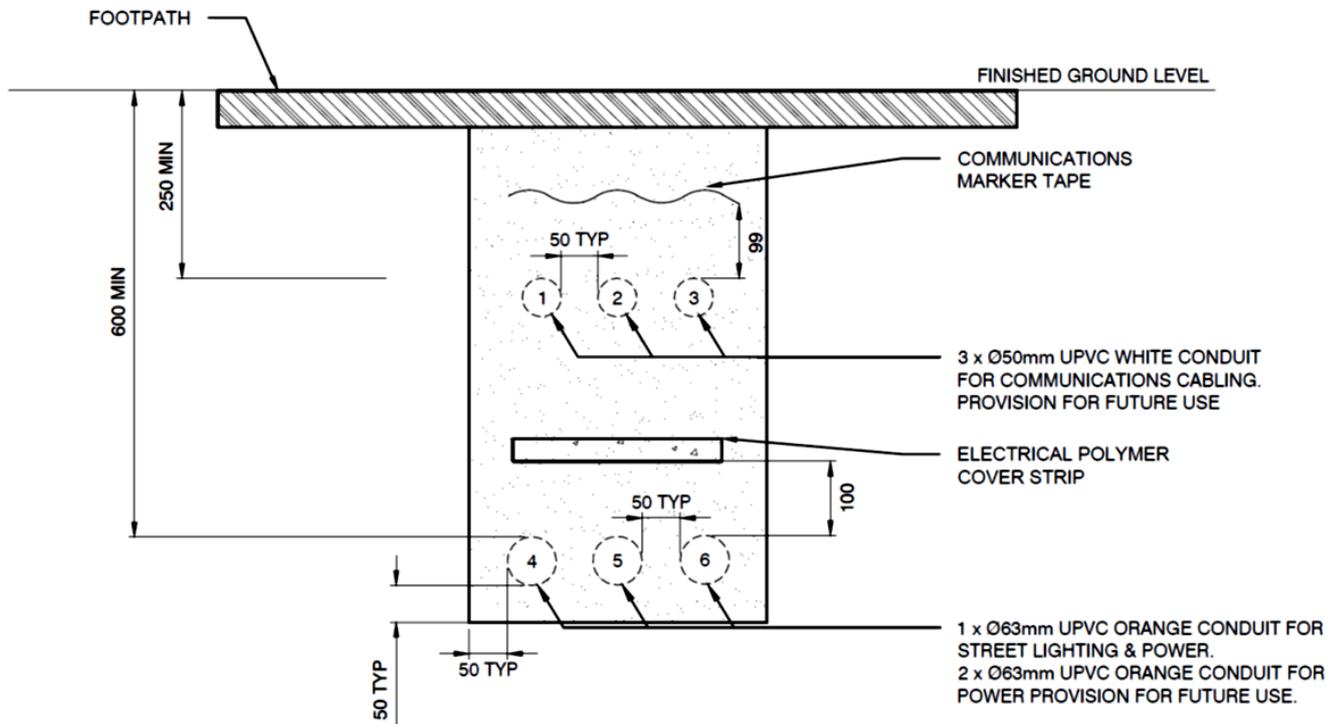
BASEPLATE DETAIL (TOP)

**NOTES:**

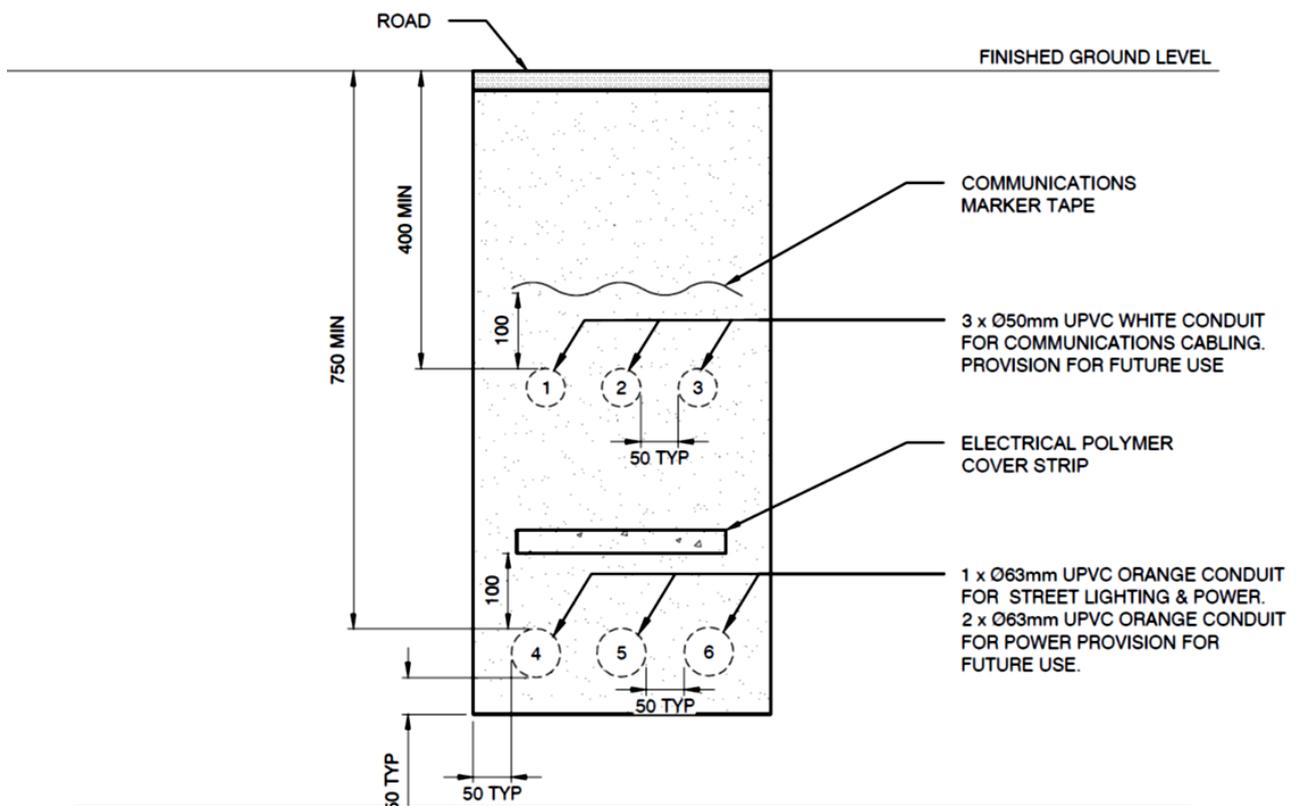
1. All dimensions are in mm
2. Column design to comply with AS1170 & AS1798.
3. All welding to comply with AS1554.
4. Galvanizing to confirm with AS4680.
5. Paint finish to AS3887 category long term.
6. Colour of pole : Galvanised

## Annexure 5

### TYPICAL ELECTRICAL & COMS CONDUIT ARRANGEMENTS

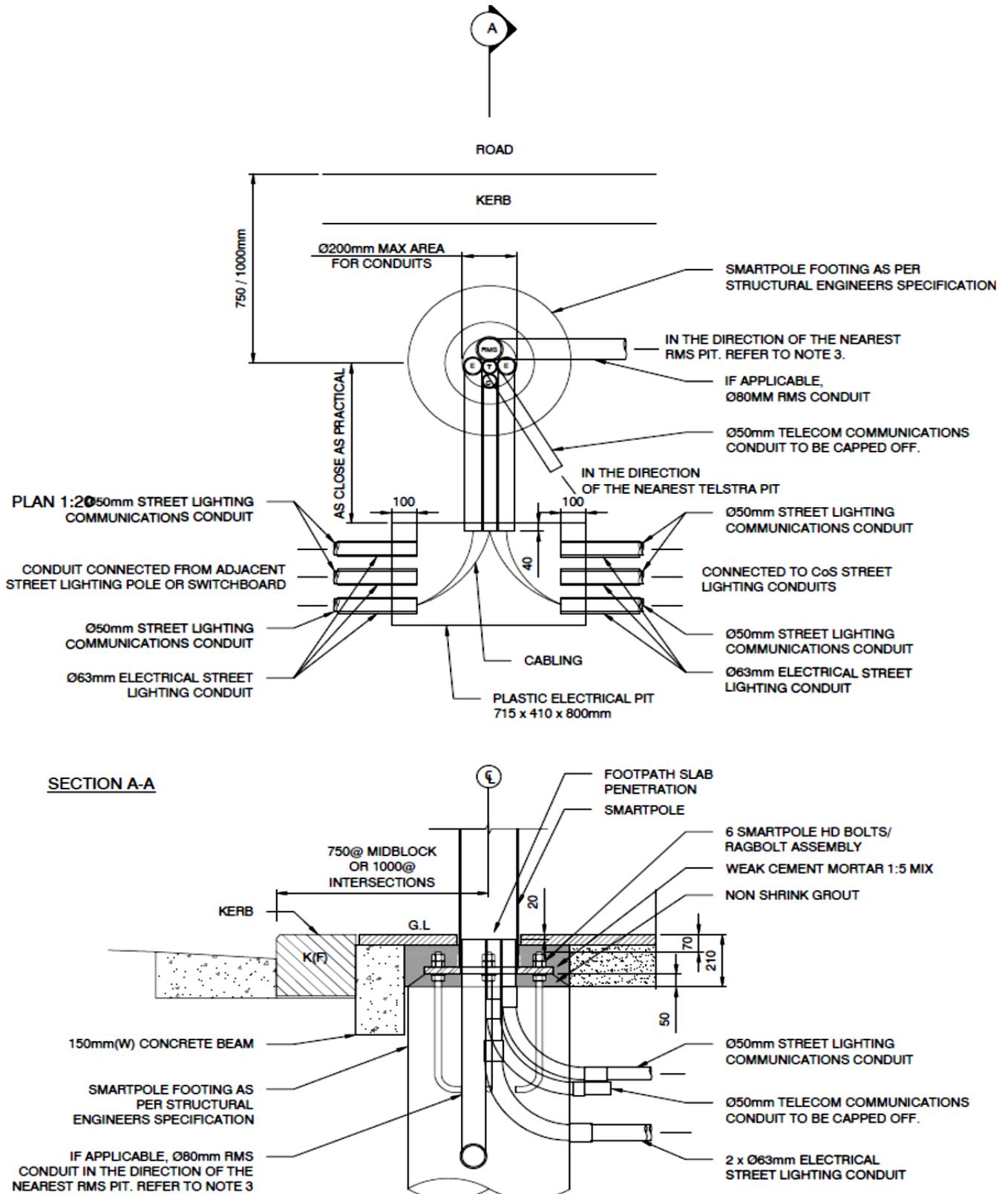


#### TYPICAL ELECTRICAL & COMMS CONDUIT ARRANGEMENT (ROAD)



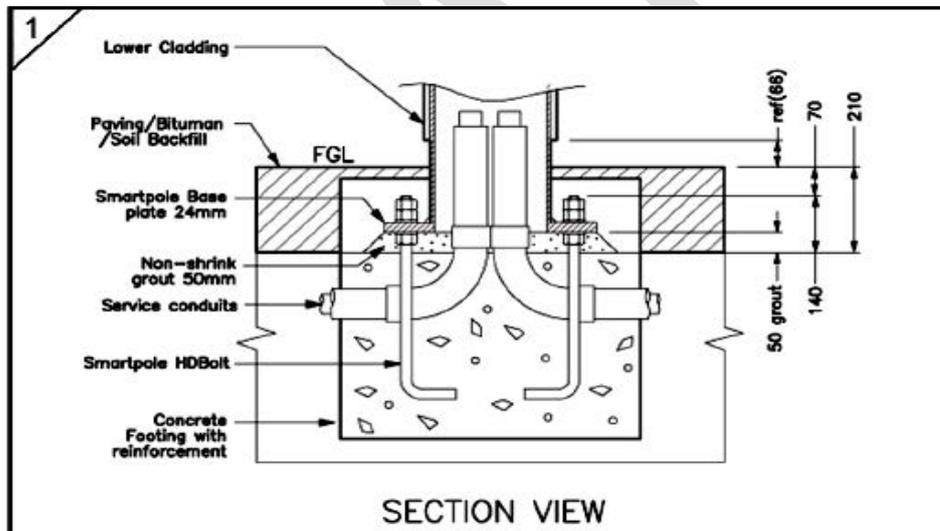
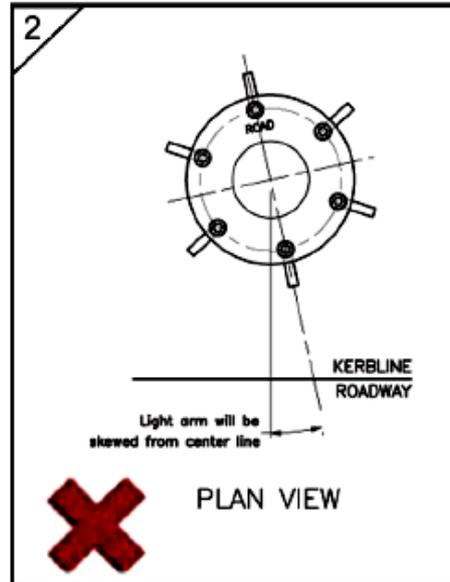
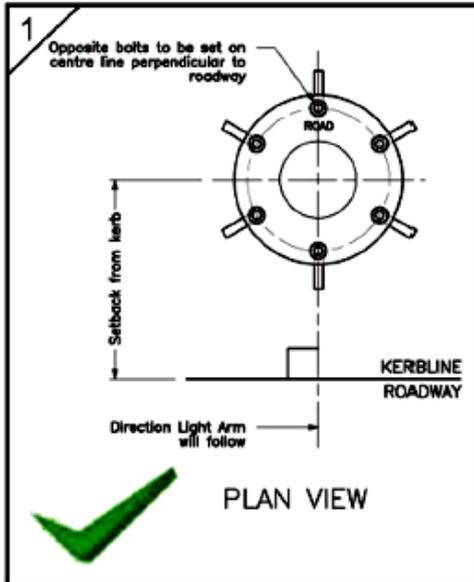
## Annexure 6

### CONDUITS ARRANGEMENT AT THE BASE OF POLE



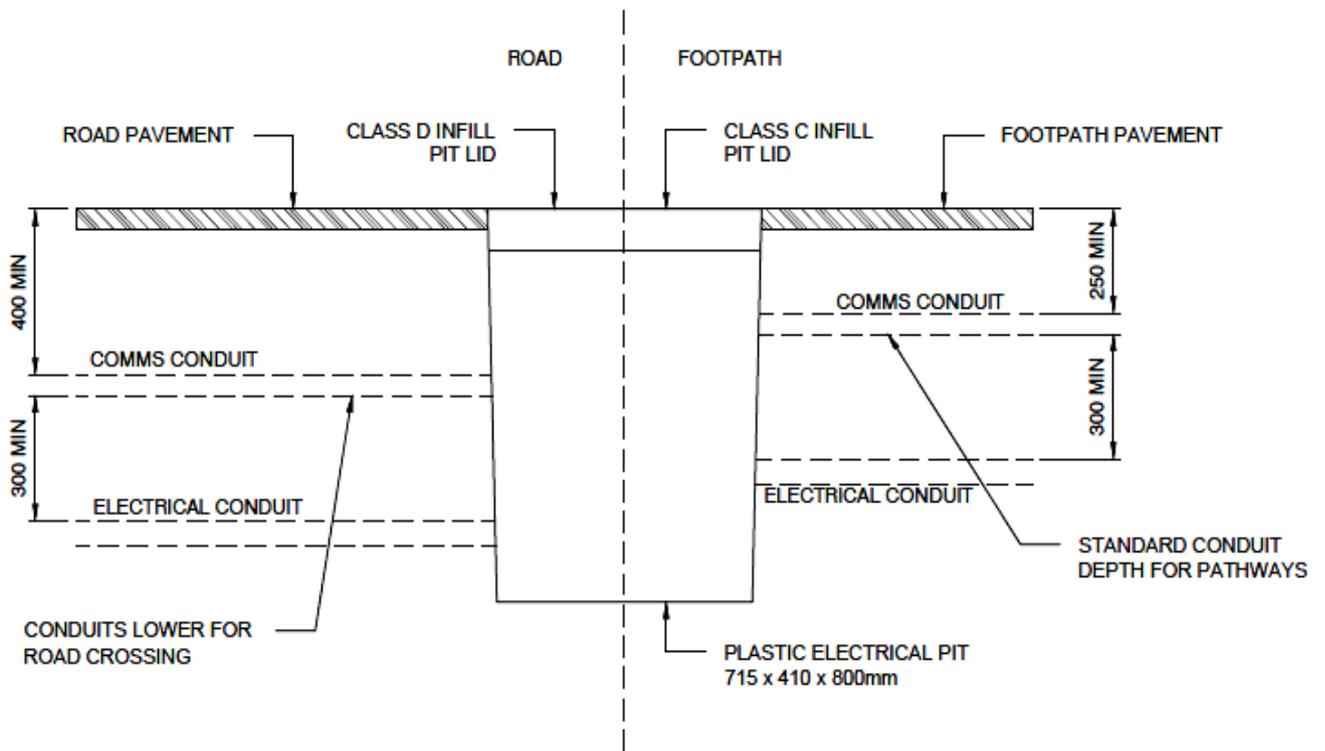
## Annexure 7

### SMART POLE HDBOLT SETUP



## Annexure 8

### GENERAL ELECTRICAL PIT ARRANGEMENT

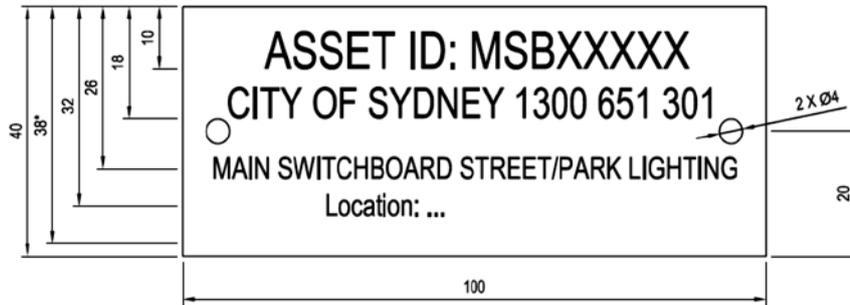


Standard COS Pit class C to be used for turf and class D for the pavement crush rock. The pit lids are to be labelled using Stainless steel disc – 75 mm “**COS-Electrical**”- engraved – epoxied on to brick or paver or pit lid where ever applicable.

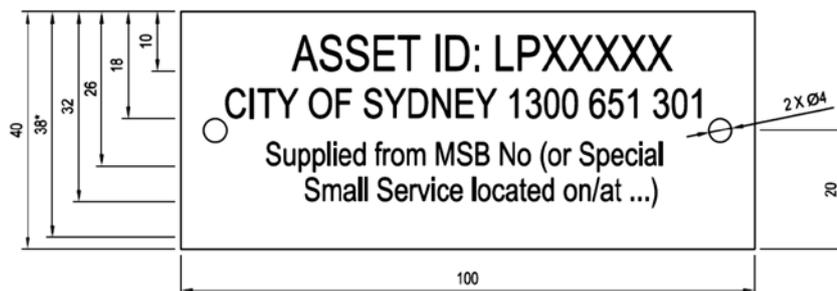
## Annexure 9

### ASSET ID PLATE DETAILS

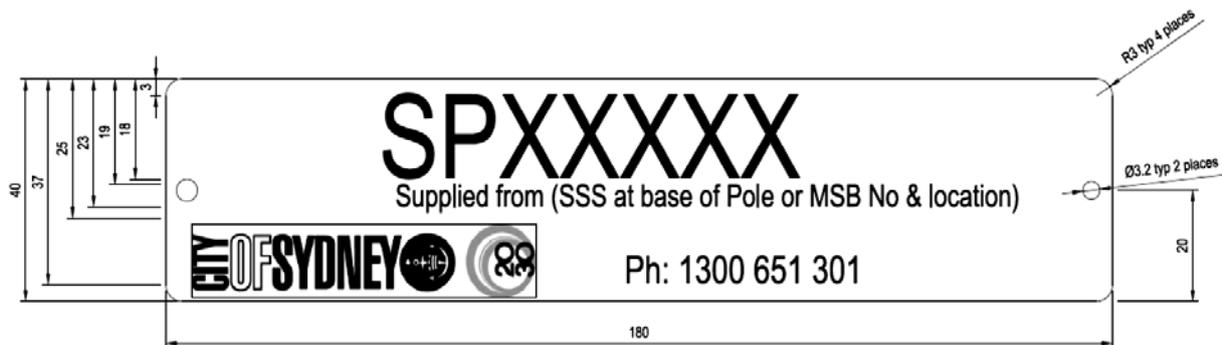
#### MSB ID PLATE



#### POLE ID PLATE



#### SMART POLE ID PLATE



#### NOTE:

- · DENOTES SPACE FOR THE 5TH LINE OF TEXT.
- ARIAL NARROW 6mm HIGH FOR THE FIRST LINE OF TEXT.
- ARIAL NARROW 5mm HIGH FOR THE SECOND LINE OF TEXT.
- ARIAL NARROW 4mm HIGH FOR THE THIRD LINE OF TEXT.
- MATERIAL IS ALUMINUM 0.8mm THICK.
- PLATE IS FITTED WITH 2 STAINLESS STEEL RIVETS OR SELF DRILLING SCREWS.
- TEXT TO BE ENGRAVED.