Revision 7
July 2025

A5 – Public Domain Lighting Design

We acknowledge the Gadigal of the Eora Nation
as the Traditional Custodians of our local area.

CITY OF SYDNEY

Contents

5.1 SCOPE

This specification sets out the Lighting & Electrical design brief, technical requirements, Design Review and approval process and installation requirements for carrying out designs for the Public Domain Lighting including shared pathways, main roads, plazas and parks throughout the City Of Sydney's (the City's) LGA.

This specification shall be applied for all Public Domain Lighting and associated Electrical design required to be carried out for the City.

5.1.1 AUSTRALIAN STANDARDS

Lighting and Electrical design specifications are not to be limited to this document but also need to comply with all relevant Australian standards as well as the City's standard, B8 Public Domain Lighting Construction.

Standard	Description
AS/NZS 1158.0:2005	Lighting for roads and public spaces Part 0: Introduction
AS/NZS 1158.1.1:2022	Lighting for roads and public spaces - Vehicular traffic (Category V) lighting -Performance and design requirements
AS/NZS 1158.1.2:2010	Lighting for roads and public spaces Part 1.2: Vehicular traffic (Category V) lighting – Guide to design, installation, operation and maintenance
AS/NZS 1158.2:2020	Lighting for roads and public spaces Part 2: Computer Procedures for the calculation of light technical parameters for Category V and Category P lighting
AS/NZS 1158.3.1 2020	Lighting for roads and public spaces Part 3.1: Pedestrian area (Category P)lighting – Performance and design requirements
AS/NZS 1158.4:2024	Lighting for roads and public spaces Part 4: Lighting of pedestrian crossings
AS/NZS 4282:2023	Control of the obtrusive effects of outdoor lighting
AS/NZS TS 1158.6.2015	Lighting for roads and public spaces - Luminaires – Performance
IES TM-21:2021	Projecting Long Term Luminous, Photon, and Radiant Flux Maintenance of LED Light Sources
IES LM-79:2024	Optical and Electrical Measurements of Solid State Lighting Product
IES LM-80:2021	APPROVED METHOD: MEASURING MAINTENANCE OF LIGHT OUTPUT CHARACTERISTICS OF SOLID-STATE LIGHT SOURCES
IES LM 84:2020+ERRATA 1:2021	Measuring Optical Radiation Maintenance of LED Lamps, Light Engines, and Luminaires
IES TM-28:2020	Projecting Long-Term luminous flux Maintenance of LED lamps and luminaires

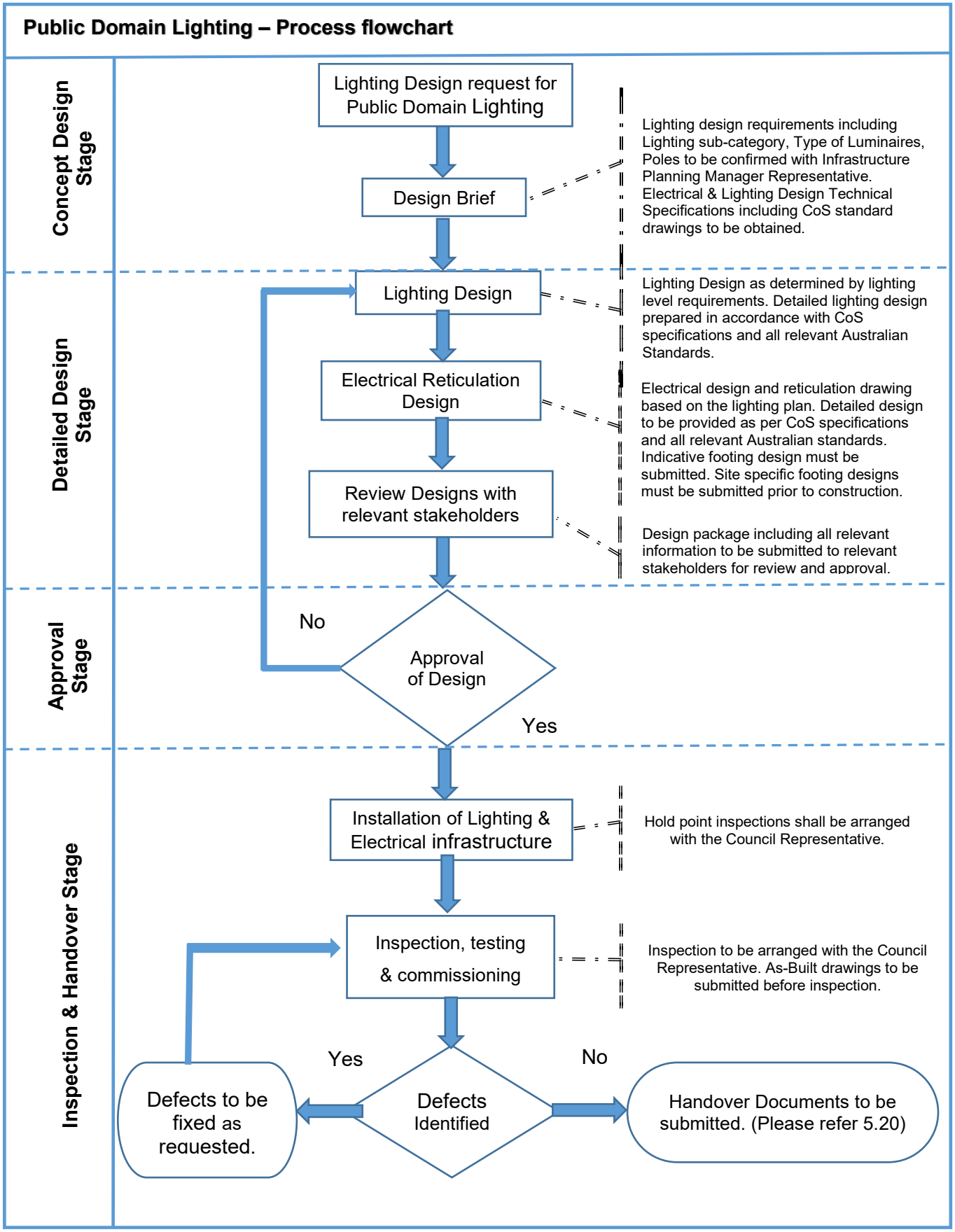
Standard	Description
IEC 61347-2-13	Particular requirements for D.C. or A.C. supplied electronic control gear for LED modules
IEC 61547:2020	Equipment for general lighting purposes - EMC immunity requirements
IEC 62386	Digital Addressable Lighting Interface (DALI) standard
AS/NZS 3100:2022 Amd 2:2024	Approval and test specification - General requirements for electrical equipment
AS/NZS 60598.1:2025	Luminaires - General requirements and tests (IEC 60598-1:2020 (ED. 9.0) MOD)
AS/NZS 60598.2.3:2015	Luminaire Particular Requirements – Luminaires for road and street lighting (IEC 60598-2-3, Ed. 3.1 (2011) MOD)
AS CISPR 15:2017	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment (CISPR 15:2013+AMD1:2015 (ED.8.1) MOD)
IEC 61643-11:2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
ANSI C136.2:2018	American National Standard for Roadway and Area Lighting Equipment –Dielectric Withstand and Electrical Transient Immunity Requirements
ANSI C136.41	American National Standard for Roadway and Area Lighting Equipment– Dimming Control Between an External Locking Type Photocontrol and Ballast or Driver
Zhaga Interface Specification: Book 18 Edition 1.0, July 2018	Luminaire Extension Module & Receptacle
RoHS 2 (2011/65/EU)	Restriction of the use of certain hazardous substances
AS/NZS 3000:2018 Amd 3:2023	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS 3017:2022	Electrical installations – Verification by inspection and testing
AS/NZS 3008.1.1:2017	Electrical installations – selection of cables – Cables for alternating voltages up to and including 0.6/1kV – Typical Australian installation conditions.
AS/NZS 3100: 2022 Amd 2:2024	Approval and test specification – General requirements for electrical equipment
SA/SNZ TR 61439.0:2016	Low-voltage switchgear and controlgear assemblies – Guide to specifying assemblies (IEC TR 61439-0, Ed. 2.0 (2013), MOD)
Service and InstallationRules of New South Wales, Oct 2019	The electricity industry standard of best practice for customer connection services and installations

5.1.2 ACCEPTABLE LIGHTING DESIGN PROGRAM

The City Of Sydney shall accept lighting design submissions, using these 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 must be designed and installed such as to avoid any 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 relevant Australian standards and, if so, the choice of appropriate subcategory of lighting rests with the road controlling authority. The lighting designer shall confirm the lighting level requirements with the City before commencing any lighting design.

5.3.2 LIGHTING DESIGNER

Lighting designs shall be undertaken by a suitably qualified and a competent practising lighting designer.

The designer must be conversant with Australian local codes for outdoor lighting. The designer must provide a lighting design and statement confirming that design complies with the requirements of the specified standards and signed off. It will be the designer's responsibility to ensure that the lighting scheme meets all the relevant City of Sydney and Australian standards requirements.

5.3.3 LUMINAIRES

Luminaires that are owned and maintained by the City shall be as per the City's approved standard suite of LED luminaires. For more information, refer to the City's Sydney Lights Design Code:

Sydney Lights: Public domain design code

If non-standard luminaires are proposed, approval must be obtained from the City. The designer must submit the details as per Annexure 11 of this specification.

5.3.4 LIGHTING CATEGORY

The designer shall refer to Australian Lighting Standards and Sydney Light Code for lighting category.

Applicable Lighting sub-categories shall be confirmed with the City before commencing any lighting design.

5.3.5 CATEGORY V LIGHTING

This lighting category is applicable to roads on which the visual requirements of motorists are predominant, e.g. traffic routes. Subcategories range from V1 to V5, which Includes provisions for motorways, arterial, sub-arterial and main roads.

The design is to comply with the Light Technical Parameters (LTP) of AS/NZS1158.1 Road Lighting – Vehicular traffic (Category V) lighting. The design should provide a lit environment conducive to the safe and comfortable movement of vehicular and pedestrian traffic at night and discourage illegal acts.

5.3.6 CATEGORY P LIGHTING – LOCAL ROADS, CYCLEWAYS, PATHWAYS AND PLAZAS

This lighting category is applicable to roads on which the visual requirements of pedestrians are dominant e.g. local roads and local area traffic management (LATM) devices. It provides a lit environment to help pedestrians orientate themselves, detect potential hazards, discourage fear of crime and crime against the person. Also, it includes lighting which is applicable to roads and public spaces, where the visual requirements of pedestrians are dominant.

The Standard includes the following sub-categories:

- Category PR (for roads in local areas)
- Category PP (for pathways)
- Category PA (for public activity areas excluding car parks)
- Category PE (for connecting elements)
- Category PC (for outdoor car parks)

The design is to comply with the LTP of AS/NZS1158.3.1 Lighting for roads and public spaces - Pedestrian area (Category P) lighting - Performance and design requirements. The principles of “Crime Prevention through Environmental Design” shall be considered.

5.3.7 PEDESTRIAN (ZEBRA) CROSSINGS

The principal objective is to provide advanced warning to motorists of the presence of the crossing, associated signs and markings. Enhanced pedestrian visibility shall be provided by direct illumination of the pedestrians. The lighting scheme involves both vertical and horizontal illuminance over the designated area.

Lighting requirements shall comply with the LTP as specified in AS/NZS 1158.4:2024. Light spill and glare must be minimized. Supplementary flood lighting on pedestrian crossings shall comply with PX1 or PX2 Sub-category unless otherwise specified.

5.4 LIGHTING DESIGN REVIEW

A Lighting design certified by a suitably qualified practising lighting designer, MIES member or equivalent, shall be submitted to the City for review and approval, prior to commencing any installation work. The lighting design and layout shall be as per the requirements specified for the below 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
- Alternative compliant lighting design
- Lighting design brief and certificate signed-off.by the consultant. Refer to Annexure 1 of this document.
- Name of the computer program used
- Luminaire intensity distribution tables in IES/CIE format and the origin of photometric data
- Details of the road surface reflection assumed in Category V design calculations, if any.

5.4.2 LIGHTING DESIGN DRAWING

- The luminaire schedule and description shall be provided with the details below:
- 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) and luminaire/pole colour.
- The calculation summary shall indicate all relevant LTP and compliance as per AS/NZS 1158 for Category V & P lighting respectively.
- In case of Category V straight sections of road lighting, Perfectlite pole spacing table confirming compliance for the relevant category V shall be submitted along with the lighting layout. The lighting layout shall indicate pole spacing as a reference point.

- Lighting calculation points for horizontal and vertical illuminance shall comply with the requirements as specified in AS/NZS1158.2.
- Luminaire labels with mounting height should be shown.
- Obtrusive lighting calculations on adjacent residential properties as per relevant Australian standards must be provided.
- 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.
- Drawings showing pole locations, existing underground services and electrical reticulation must be included on the landscape layout.
- A locality diagram indicating the overall layout and location of works, with all street names must be shown.
- A North point symbol shall be provided on the drawing.
- A luminaire schedule must be included as specified in 5.4.2 above.
- The lighting design details shall include the lighting 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 shall be supplied in electronic format as DWG (drawn to scale of 1:250@A1) and PDF formats.

5.4.4 LIGHT POLE, MOUNTING AND FOOTINGS

- Specifications for the poles e.g. pole type, colour; must be obtained from the City during the design stage.
- Certification of the structural design by a suitably qualified and practising engineer is required for all components of structures, which are part of the approved City lighting suite. The structural certificate shall be accompanied by the detailed design drawings and calculations for the structure.
- Footing designs and all associated mounting details must be certified by a suitably qualified and practising engineer and shall be submitted to the City for review. Supporting documents shall be submitted along with the certificate.
- Footing designs for frangible energy absorbing poles shall be undertaken in accordance with AS/NZS1158.1.2.
- All structures shall be designed to achieve 50 years of life expectancy and shall be designed in accordance with relevant Australian standards. Provisions for corrosion prevention shall be considered for all members, especially members which are in contact with the ground.
- All electrical conduits and embedded members shall be considered during the design to ensure constructability of the footing without any compromise to the structural integrity of the structure.
- The shop drawings of the poles that are approved by design engineer must be submitted to the City for review prior to manufacture.
- Mount type shall be Ragbolt Assembly with standard pole baseplate.
- Hold-Down (HD) bolts shall not be exposed above the ground including those on new poles to be owned by Ausgrid. Refer to Annexure 6 and 7, Section A-A for details.

5.5 POLE SETBACK

Below specified pole setbacks shall be applicable to all new poles to be owned by the City:

- Minimum pole setback shall be 750mm from the face of the kerb, unless otherwise specified.
- Minimum pole setback at intersections shall be 1000mm from the face of the kerb to the centre of the pole.

5.6 POLE ORIENTATION

Unless otherwise specified, pole outreach arms and luminaires shall:

- Be oriented at 90 degrees to the centreline of the road.
- Have an upcast angle of “0” degrees.

5.7 POLE LOCATIONS

- Pole locations shall be agreed upon before commencing landscape design.
- Pole locations shall be clear of all driveways, existing underground services, obstructions, existing utility pits, awnings etc.
- The location of existing street trees can be a significant constraint to lighting layouts and designs. Tree canopies may conflict with pole installations or light spill from luminaires, and excavation for pole footings and cable trenches can severely affect tree roots. Proper consideration of these constraints is necessary to ensure a viable design and mitigate the impact to trees. Advice should be sought from the City’s tree management team.

5.8 TEMPORARY LIGHTING

- If the existing luminaires are to be removed for any construction activity, the designer must provide a temporary lighting design for review and approval by the City. Temporary lighting shall comply with the requirements of AS/NZS 1158.
- Unless temporary lights are operating, existing lights shall not be removed or decommissioned.
- The temporary lighting will be regularly checked to ensure operational effectiveness. Any malfunctions or outages will be rectified immediately.
- Temporary lighting fixtures are to be adjustable for various locations and can be quickly set up and removed. Ensure that they do not obstruct pedestrian movement or vehicular traffic.
- Electrical installations for the construction and demolition sites (including hoardings), shall comply with AS/NZS 3012.

5.9 AUSGRID LIGHTING

This section is only applicable, if the Council decides to retain existing Ausgrid lights.

- A suitably qualified practising lighting designer, MIES member or equivalent shall undertake or certify lighting design to confirm if the existing Ausgrid lights comply with the City’s nominated lighting subcategory requirements. Detailed lighting calculations and lighting layout must be submitted to the City for review and approval.
- If the existing street lighting does not comply with the City’s nominated lighting subcategory, designers shall propose an alternative compliant lighting design. Detailed lighting calculations and lighting layout must be submitted to the City for review and approval.

- If the proposed alternative lighting layout requires removal, addition or relocation of any poles/luminaires, an ASP level 3 design consultant shall be engaged to undertake design works and to obtain design certification from Ausgrid prior to construction.
- ASP level 3 design shall be submitted to the City for review and approval prior to obtaining certification from Ausgrid and before construction commences.
- A lighting consultant or ASP level 3 consultant shall be responsible for lodging applications with Ausgrid for all lighting upgrade-related works with the City's approval on the application form.
- The City will sign the Public Lighting Form to agree with the residual value charges associated with removal of existing Ausgrid assets after the design is reviewed and approved.

5.10 CBD AREA LIGHTING REQUIREMENTS

- Smartpoles shall be installed within the CBD area in accordance with the Sydney Lights Design Code.
- Intersection traffic lights shall be replaced with Smartpoles integrated with Traffic Control System (TCS)
- Pole layout needs to be confirmed with the City.
- Removal of redundant Ausgrid lights must be undertaken through ASP level 3 level design process.
- ASP level 3 design shall be submitted to the City for review and approval prior to obtaining certification from Ausgrid and before removal of poles.
- A lighting consultant or ASP level 3 consultant shall be responsible for lodging applications with Ausgrid for all lighting.
- ASP 3 level design and associated Ausgrid charges shall be borne by the developer.

5.11 PARK LIGHTING REQUIREMENTS

- Post-top poles shall be installed within parks in accordance with the Sydney Lights Design Code, Park Design Code.
- Pole layout must be confirmed and approved by the City.
- Where bollard lighting is proposed, coordination with the City's Infrastructure Planning is required to obtain detailed specifications and installation guidance.
- Removal of redundant Ausgrid lights must be undertaken through ASP Level 3 design process. Supply cables are to be cut and sealed end appropriately. Redundant poles and cabling will be removed by the City's electrical contractor.
- ASP level 3 design shall be submitted to the City for review and approval prior to obtaining certification from Ausgrid and before removal of poles.

5.12 DECORATIVE LIGHTING REQUIREMENTS

The design of decorative lighting installations shall be developed in consultation with the City and must not proceed without prior engagement. All proposed lighting designs are subject to review and approval by the Infrastructure Planning, Electrical asset team before commencement of construction.

5.12.1 INGROUND UPLIGHTS REQUIREMENTS:

Inground uplights shall comply with the following performance criteria:

- Lighting Distributions: Symmetrical or Asymmetrical beams
- Ingress Protection: IP68

- Impact Protection: IK10
- Colour Temperature: 3000K or 4000K
- Surge Protection: Minimum 10 kV
- Static load Resistance: Minimum 4000 kg

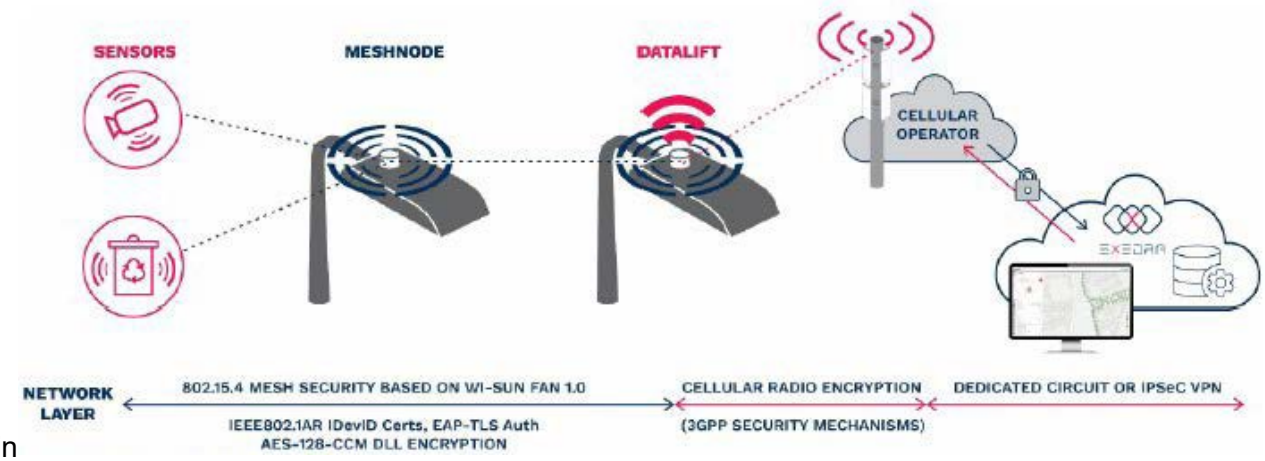
5.13 SMART LIGHTING AND CONTROL SYSTEMS

The new smart lighting control system of the City is generally comprised of three interacting components, which include:

- **A central management system** - with software running on a central computer (cloud or on-premises server) that delivers web user interfaces on desktop and/ or mobile devices for operators to manage and control lighting.
- **Network communications infrastructure** – that is sub-divided into Backhaul communication networks and field device communication networks with gateways that are widely distributed across the local government area. This infrastructure enables the central management system to send and receive data from individual controllers, while providing monitoring and control.
- **Light point controllers** - that include both cabinet-based or individual luminaire-mounted controllers such as DATALIFTs or MESHNODEs. These controllers allow for remote and individual adjustment of each luminaire's lighting parameters, such as intensity and colour temperature.

All three levels consume and produce data to provide the City with operational functionality and information, to save energy, reduce maintenance costs and improve lighting for safety and quality of life.

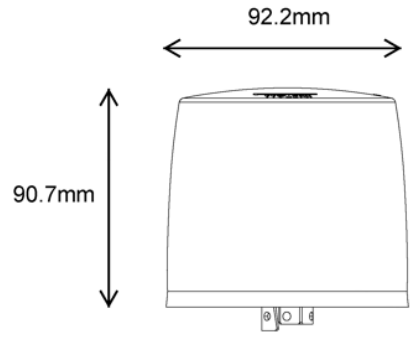
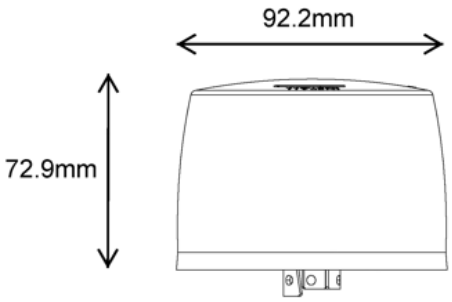
Smart City network schematic:



in

Smart Control Node

Item	Smart Control Node	
	Data Lift Node	**Mesh Node**
Model Numbers	**LIFTCRVF**	**MESHCR**

Image		
Product Description	7-pin NEMA Smart Cities Light Point Controller (LPC) with both cellular and mesh radio network capability for remote monitoring of streetlighting network to provide real time system health information and to provide backhaul services for smart city devices.	7-pin NEMA Smart Cities Light Point Controller (LPC) with mesh radio network capability for remote monitoring of streetlighting network to provide real time system health information via the Data Lift, and to provide backhaul services for smart city devices.
Application	Compatible with any light fitting equipped with a 7-pin NEMA socket that are deployed for streetlighting, parks, and sports lighting applications.	Compatible with any light fitting equipped with a 7-pin NEMA socket that are deployed for streetlighting, parks, and sports lighting applications.
Other requirements	Top mounted NEMA socket preferred.	Top mounted NEMA socket preferred.

– All functional lights which have 7 pin NEMA & Zhaga sockets and compatible with Schreder EXEDRA IoT system shall be supplied from MSB circuit and controlled by smart nodes.
– Drawing showing luminaires details and GPS coordinates shall be submitted to the City and Schreder Technical Support via scshelpdesk@schreder.com. Smart node layout will be created based on the submitted design.

Smart Controller integrated in Main Switchboard (MSB).

– Other types of lighting including decorative lighting which do not have smart node readers will require smart control equipment at the MSB.
– Cabinet-based control solutions may require non-standard MSB arrangement to accommodate the control devices. Consultation with and approval from the City is required.

5.14 ELECTRICAL RETICULATION DESIGN

5.14.1 GENERAL

– Electrical designs shall be undertaken by a suitably qualified and a competent practising Electrical designer. The designer must be familiar with relevant Australian and the City of Sydney standards. The designer must provide a design statement confirming it complies with the requirements of the standard and signed off.
– It will be the designer's responsibility to ensure that the electrical design complies with AS/NZS 3000, NSW Service and Installation Rules, Ausgrid and the City's requirements.
– Electrical design shall be submitted to the Council for review and approval before commencing any installation works on site.

5.14.2 POWER SUPPLY, ELECTRICAL CIRCUITS AND RETICULATION

- The point of power supply can be determined in consultation with the City to determine whether the lights can be powered from existing Main Switch Board (MSB) or whether a new electrical supply connection is required.
- If a new meter supply connection is required, the point of supply location shall be determined by application to Ausgrid.
- If an existing MSB exists, then the consultant must inspect the existing electrical infrastructure to identify the source of supply, and determine its suitability for installation of additional electrical load.
- If a three-phase power supply is adopted then circuits shall be designed to balance the load across all phases, so that adjacent luminaires are not on the same phase. GPOs shall be on a separate single- phase supply as indicated in Figure A below.
- In case of single phase power supply, adjacent lights shall not be connected on the same sub-circuit, separate circuit arrangement shall be used.
- The electrical consultant shall provide electrical schematics, for example:

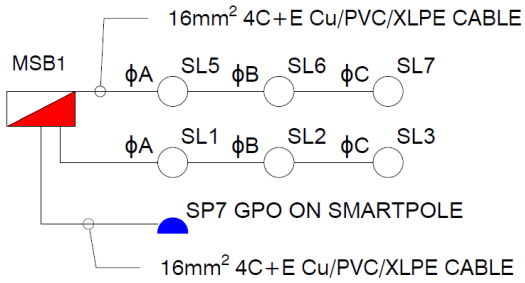


Figure A

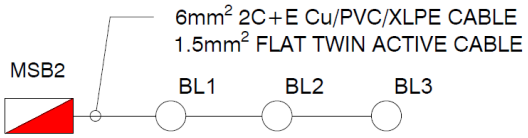
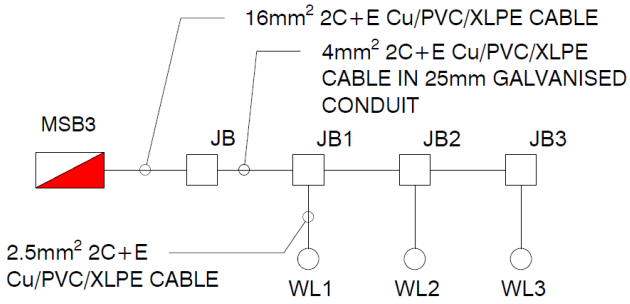


Figure B



LEGEND

MSB - MAIN SWITCH BOARD
JB - JUNCTION BOX
BL - BOLLARD LIGHT
WL - WALL MOUNTED LIGHT

Figure C

The electrical consultant shall provide the following information:

- Existing current maximum demand
- Maximum demand calculation
- Single line diagram of the MSB
- Electrical cable size and percentage voltage drop/fault loop impedance, calculations shall be provided using PowerPack or PowerCad software programs.
- Detailed electrical reticulation plan indicating conduit depth, quantity including occupied and spare conduits, pit locations and specifications, as well as cable sizing and type.
- Electrical supply reticulation design and footing designs shall be provided for approval prior to carrying out any construction activity.

5.14.3 CABLE ROUTES

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

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

5.14.4 ELECTRICAL CONDUITS

- All cabling installed underground for street public lighting reticulation shall be enclosed in a minimum 63mm diameter Heavy Duty (HD) PVC rigid conduits, unless otherwise specified. No cables shall be directly buried. Electrical warning PVC marker tape shall be installed above all conduits used for reticulation. Use of flexible or corrugated conduits is not permitted.
- All conduits shall be bedded on and covered by appropriate bedding materials. Standard bedding materials shall be finely divided and stone free where 100% by mass passing through 4.75 mm mesh sieve and no less than 90% by mass passing through 2.36 mm mesh sieve. The material shall be free of glass, metal, sharp object, slag, organic or other harmful substances.
- The layout and depth of electrical conduits shall comply with the requirements of **Annexure 5** of this document.
- Where site conditions prevent achieving the minimum cover requirements as specified in **Annexure 5**, the following mitigation measures shall be considered:
  - Minimum 75mm continuous poured concrete over underground position as specified in AS3000
  - Concrete Encasement: Provide a 25MPa concrete encasement with a minimum thickness of 100 mm above and 50 mm on the sides and beneath the conduits. Conduits within the encasement shall maintain the standard spacing of 50 mm between each conduit.
  - Steel Plate Protection: Install 6mm galvanised steel plates positioned 100mm above the uppermost row of conduits, minimum 150mm either side of the conduit. This shall then be covered with electrical polymer cable covers
- The minimum required standards for reduced trench depth is 500mm under roadways and 300mm under footpaths or garden beds.
- Electrical conduits must be installed clear of Tree Protection Zones (TPZ) and any existing underground services.

  The following conduit sizes shall be applicable to new electrical assets:
- Minimum 63mm rigid heavy-duty conduit shall be installed for all streetlighting circuits.
- 32mm rigid heavy-duty conduit shall be used for bollard installation.
- Minimum 25mm galvanised steel conduit shall be used for wall mounted lighting application.

5.14.5 CABLE TYPE, TERMINATIONS AND PROTECTION

- Main underground cables shall be single phase or three phase, 2C + Earth or 4C + Earth Cu/PVC/ XLPE, 0.6/1kV.

- Standard minimum main cable size shall be 4 Sq.mm for wall mounted lights, 6 Sq.mm for bollards and 16 Sq.mm for Street lights and pedestrian lights, to comply with circuit requirements. Unless otherwise specified.
- All cables shall have type V75 or V90 insulation and shall have stranded copper conductors.
- All surface mounted cables shall be fire rated type.Main cables for electrical and streetlight circuits shall be protected by RCBO protective devices.
- Main cables for streetlights shall be terminated at the base of each pole. A dedicated 10 A MCB shall be installed at the base of each column for the luminaire supply. Refer to **Figure D** for details.

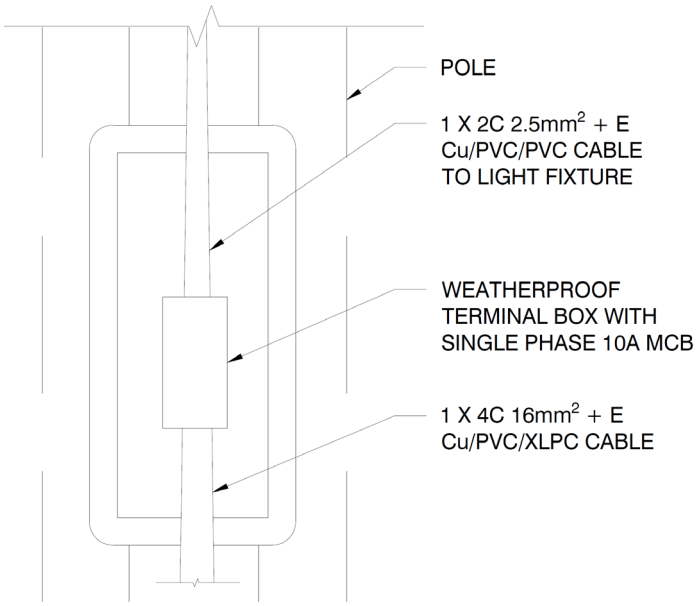


Figure D

- All the cables from the base of the poles to the luminaires shall be a minimum of 2C+Earth 2.5 Sq.mm Cu/PVC/PVC.
- The termination block shall be polycarbonate, self-extinguishing and have a minimum IP44 ingress protection rating and IK08 impact resistance rating. It shall be provided with a transparent top cover to facilitate visual inspection and access to protective devices.
- Main cables for bollards shall be terminated at the connection box within the bollards.
- Main cables for wall mounted lights shall be terminated in a junction box. The cable from the junction box to the luminaire shall be 2C+Earth 2.5 Sq.mm Cu/PVC/PVC.
- Consultants shall provide detailed drawings indicating the above arrangement clearly.
- The number of circuits shall suit circuit loading and voltage drop calculations.
- All circuits shall be a loop in, loop out arrangement except for the wall mounted light connection.
- The insulation of the cables shall be coloured as shown in the 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

5.14.6 ELECTRICAL PITS

- Pits shall be located adjacent to each pole.
- Pits are required at every road crossing and horizontal/vertical changes of direction of conduits.
- A pit shall be installed adjacent to the MSB.
- Pits shall be located to minimise water ingress and avoid areas prone to flooding
- Pits shall be installed in a manner that facilitates effective drainage of water and prevent sediment ingress.
- Pit must be finished flush to the Finished Ground Level (FGL)
- All pit lids to have 75mm diameter stainless steel identification plate engraved “CoS Electrical”. The plate shall set into a recess within the pavement surface to ensure it is flush with the lid surface.
- Refer to **Annexure 9** for details.

On street Installations:

- Pits shall be located adjacent to each streetlighting pole.
- Class C infill pit lid shall be used within footpaths
- Class D infill pit lid shall be used for road carriageways

In park Installations:

- Polycrete type 45 pit shall be used for parks
- Class B pit lid for garden or turf areas
- Class C infill pit lid for concrete pedestrian paths
- Class D infill pit lid will be used on trafficable paths or maintenance vehicle access.
- Pits must be spaced at interval not exceeding 60m and shall also be provided at the end of the circuit.
- Lockable lid may be required in specific areas. Consultation with and approval from the City is required.

5.15 MAIN SWITCHBOARD (MSB)

- Refer to **Annexure 3.1 and 3.2** for the City’s standard drawing for single/three-phase MSB size and details.
- Shop drawings for the MSB must be submitted for review and approval by the City before manufacture.
- If a non-standard MSB is required, shop drawings shall be provided for review; written approval must be obtained before manufacturing and installing the MSB.

5.16 MAIN EARTHING

- Refer to **Annexure 12** for main earthing schematics.
- Earthing shall be Multiple Earthed Neutral (MEN) type.
- Main earth electrode size and depth – Shall comply with AS/NZS 3000 requirements.
- All exposed earth electrodes and clamps shall be galvanised to prevent rusting.
- Suitable earth clamps shall be used for connection of earthing cable to the earth rod, with warning tags engraved with “Main Earthing conductor – Do Not Disconnect”
- Earth pits shall be used to access main earth electrode. To be installed adjacent to the MSB and shall be flushed with the FFL.

- Main earthing cable size shall be designed by an Electrical consultant based on fault levels.
- Main earthing cable shall be run in a PVC HD conduit between the earth pit and the base of the MSB.
- Above earthing arrangement shall be submitted along with the electrical reticulation design, for the City's review and approval.
- The depth of the earth rod and size shall comply with AS/NZS 3000 requirements.

5.17 INSTALLATION, TESTING AND INSPECTION

- Installation of all Works shall be as per the drawings approved by the City.
- Any deviation from the approved drawings shall be reported back to the City and written approval must be obtained for any deviation before commencing any Works.
- At the practical completion of installation works, the contractor must organise a handover inspection to be attended by City lighting team representative.
- The City's representative will be available on site to carry out visual site inspections (post installation) of electrical and lighting assets.
- The electrical contractor must carry out all the electrical tests required as per AS/NZS 3017. The electrical contractor must organise and make available all relevant calibrated tools and equipment before commencing any electrical test on site. All electrical tests must be witnessed by the design consultant.
- The City's standard ABLOY padlocks (2) are to be installed to the MSB cabinet. Contact the City's security team at security@cityofsydney.nsw.gov.au.
- The contractor must supply and install asset ID labels. Refer to **Annexure 10** for details.
- Pole asset identification label shall be installed facing the most likely approach direction to ensure visibility and safety for inspection and maintenance. For galvanised steel poles and tapered pedestrian poles, asset labels shall be positioned 500mm above the access door.
- A laminated copy of the As-Built drawing and Single Line Diagram (SLD) must be attached to the inner side of the MSB cabinet door.
- The Council will advise of the defects list, if any. Upon receiving it, the contractor must address the issues and arrange for final inspection.
- The contractor shall provide Work As Executed drawings before arranging a final inspection. Refer to section 5.19 of this document for Work As Executed drawings requirements
- The contractor shall provide a signed copy of the City's "Details of new lighting installation inspection, test and completion certificate" as per **Annexure 2**.
- All lighting and electrical installation works, shall be certified by the design consultants on the project. The electrical consultant on the project must witness the electrical tests and sign off the certificate as per **Annexure 2**.

5.18 HOLD AND WITNESS POINTS

Refer to Section 8.6 of these specifications in B8: Public Domain Lighting Construction.

5.19 WORK AS EXECUTED DRAWINGS REQUIREMENTS

The following information shall be provided on the Work As Executed drawings in AutoCAD and PDF format:

- Drawings in AutoCAD and PDF format stamped "WORK AS EXECUTED" 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 2020 (MGA2020) orientation, Zone 56.

- The pole schedule, including footing type, Asset ID label numbers, pole height, pole offset, pole type, luminaire details, outreach arm length, luminaire mounting height, pole colour and luminaire colour.
- Drawings shall be submitted to the City and Schreder Technical Support via scshelpdesk@schreder.com. Smart node layout will be created based on the submitted design.
- The drawing, indicating electrical conduits layout, pits and cable runs per conduit including depths, offset and circuit labels as installed on site for the complete installation. Cables and conduit size shall be specified on the drawing.
- Location of the MSB and Pillar number from where the MSB is fed from or the Ausgrid Pole number/ location in case of Special Small Services (SSS) supply.
- Footing drawings and designs as installed on site, certified by a suitably qualified and practising structural and geotechnical consultant

5.20 HANDOVER DOCUMENTS

Below documents need to be submitted as part of handover:

- Work As Executed drawings as per the requirements specified in section 5.19 above.
- The contractor is required to liaise with the Asset Management Team within the City and follow the Asset Data Template User Guide to hand over the data to the City prior to being imported into the City's asset management systems.
- Final structural certificate provided by a suitably qualified and practising structural consultant, confirming that pole and footing are constructed in accordance with the design drawing.
- Geotechnical report and certificate provided by a suitably qualified and practising geotechnical consultant , verifying the soil parameters on site against the design assumptions of the footings.
- Electrical contractors must issue a 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 andcertified as being safe.
- A copy of Notification Of Service Work (NOSW) must be provided.
- An electrical design and installation certification from the electrical consultant engaged on the project as per Annexure 2.
- A lighting engineers' certification confirming that the installed lighting complies with the design intent.
- Operation and maintenance manual including product manuals.
- Product warranties.

5.21 REVISION REGISTER

Revision	Clause	Description of Revision	Authorised By	Date
Rev. 6	5.17	Updated to MGA2020	SA	Aug-23
	Title	Titles revised from "A5 - Street Lighting Design" To A5 – Public Domain Lighting Design		

Revision	Clause	Description of Revision	Authorised By	Date
Rev. 7	5.3.3	Link to Sydney Lights: Public domain design code updated	SA	Jul-25
	5.3.6	Lighting sub-categories updated		
	5.4.4	The structural requirements have been updated for the review of footing design		
	5.5	Pole Setback from kerb face updated		
	5.8	Temporary Lighting section updated		
	5.9	Ausgrid Lighting section updated		
	5.11	New section for Park Lighting Requirements		
	5.12	New section for Decorative lighting requirements		
	5.13	New section for Smart Lighting and Control System		
	5.14.2	Figures updated & section number has been revised from 5.11.2 to 5.14.2		
	5.14.4	New section for Electrical conduits		
	5.14.5	Cable size updated & section number has been revised from 5.11.4 to 5.14.5		
	5.14.6	Pit requirements updated & section number has been revised from 5.11.5 to 5.14.6		
	5.19	Work As Executed Drawings Requirements.		
	5.15	Section number has been revised from 5.12 to 5.15		
	5.16	Section number has been revised from 5.13 to 5.16		
	-	Section number 5.14 has been removed		
	5.17	Section number has been revised from 5.15 to 5.17		
	5.18	Section number has been revised from 5.16 to 5.18		
	5.19	Section title has been updated to Work As Executed Drawings requirements. Schreder Technical Support contact details provided. The section number has been updated from 5.17 to 5.19.		
	5.20	Structure and asset handover requirements have been revised. The section number has been updated from 5.17 to 5.19.		

ANNEXURE 1: LIGHTING DESIGN BRIEF AND CERTIFICATE

City of Sydney - Infrastructure Planning Use Only	
CoS Design Requirements:	Scheme:
DA Number:	Signed by City's Infrastructure Planning Lighting Representative:

Location	Lighting Category	Column Type	Lanten Type	Lamp Source

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

Location
Lighting Category
Computer package used
Mounting Height (m)
Column arrangement
Overhang (m)
Effective Width (m)
Lantern Type
Lamp Type & Wattage (W)
Lamp Design lumens
Maintenance Factor

ANNEXURE 1: LIGHTING DESIGN BRIEF AND CERTIFICATE, CON'T

Location
Average Horizontal Illuminance (Eh)
Calculated Average Horizontal Illuminance (Eh)
Point Horizontal Illuminance (Eph)
Calculated Point Horizontal Illuminance (Eph)
Point Horizontal Illuminance Surrounds (EphS)
Calculated Point Horizontal Illuminance Surrounds (EphS)
Illuminance Horizontal Uniformity (Ue1/Ue2)
Calculated Illuminance Horizontal Uniformity (Ue1/Ue2)
Point Vertical Illuminance (Epv)
Calculated Point Vertical Illuminance (Epv)
Upward Waste Light Ratio (UWLR)
Calculated Upward Waste Light Ratio (UWLR)
Maximum Intensity Control Zones
Calculated Maximum Intensity Control Zones
Average Carriageway Luminance (L)
Calculated Average Carriageway Luminance (L)
Overall uniformity (Uo)
Calculated Overall uniformity (Uo)
Longitudinal Uniformity (Ul)
Calculated Longitudinal Uniformity (Ul)
Threshold Increment (TI)
Calculated Threshold Increment (TI)

Underground Cable size:	mm^2	Cable Type:	
Calculated Volt drop:	V	Calculated Loop Impedance of each leg:	Ω
Overcurrent Protective Deviceof Outgoing Circuit:	AS	Rating:	A
Calculated Short Circuit current of each leg:	KA		
Maximum disconnection time 0.4 seconds:			

Mains Switch: AS	Type:	Rating: A
Number of Poles:		
Contactor/Relay type:	Rating: A	No. of Poles:

Electronic Time Clock:	Type:
Power Supply: V	Phases:
Method of Earthing:	

ANNEXURE 1: LIGHTING DESIGN BRIEF AND CERTIFICATE, CON'T

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

For the design installation at:	
Name of Designer:(BLOCK Letters)	Position:
Company Name:	
Signature:	Date:
For and ON BEHALF of CLIENT:	
Address:	
City of Sydney - Infrastructure Planning Use Only.	
Checked By: (Name in BLOCK letters)	Position:
Signature:	Date:

Note: LIGHTING DESIGN BRIEF CERTIFICATE TO BE COMPLETED, CERTIFIED AND RETURNED ALONG WITH THE LIGHTING/ELECTRICAL DESIGN

ANNEXURE 2: DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST AND 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 Planning. All completed forms are to be submitted to the City of Sydney. All electrical tests shall be witnessed by the electrical design consultant.

VISUAL INSPECTION

Location:
Contractor:
Type of Installation: (e.g. street lighting, Park lighting, Plaza lighting, wall lighting, illuminated sign, etc.)
Date of Inspection:

STRUCTURAL INSPECTION

Mark ☑ Satisfactory or ☒ Unsatisfactory On Completion:

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

ANNEXURE 2:

DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST AND COMPLETION CERTIFICATE, CON'T

Mark ☑ Satisfactory or ☒ Unsatisfactory On Completion:

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

ANNEXURE 2:

DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST AND COMPLETION CERTIFICATE, CON'T

Details of new lighting installation inspection test and completion 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	Ω	Circuit 1	□
Circuit 2	Ω	Circuit 2	□
Circuit 3	Ω	Circuit 3	□
Circuit 4	Ω	Circuit 4	□

Insulation Resistance (Note: Remove neutral conductor from PME system)			Insulation Resistance (column wiring) (All columns)		
Circuit 1	P-N	Ω	Circuit	Column No.	
	P-E	Ω		P-E	MΩ
	N-E	Ω		N-E	MΩ
Circuit 2	P-N	Ω	Circuit	Column No.	
	P-E	Ω		P-E	MΩ
	N-E	Ω		N-E	MΩ
Circuit 3	P-N	Ω	Circuit	Column No.	
	P-E	Ω		P-E	MΩ
	N-E	Ω		N-E	MΩ
Circuit 4	P-N	Ω	Circuit	Column No.	
	P-E	Ω		P-E	MΩ
	N-E	Ω		N-E	MΩ

METHOD OF EARTHING: TN-C-S

ANNEXURE 2:

DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST AND COMPLETION CERTIFICATE, CON'T

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

ANNEXURE 2:

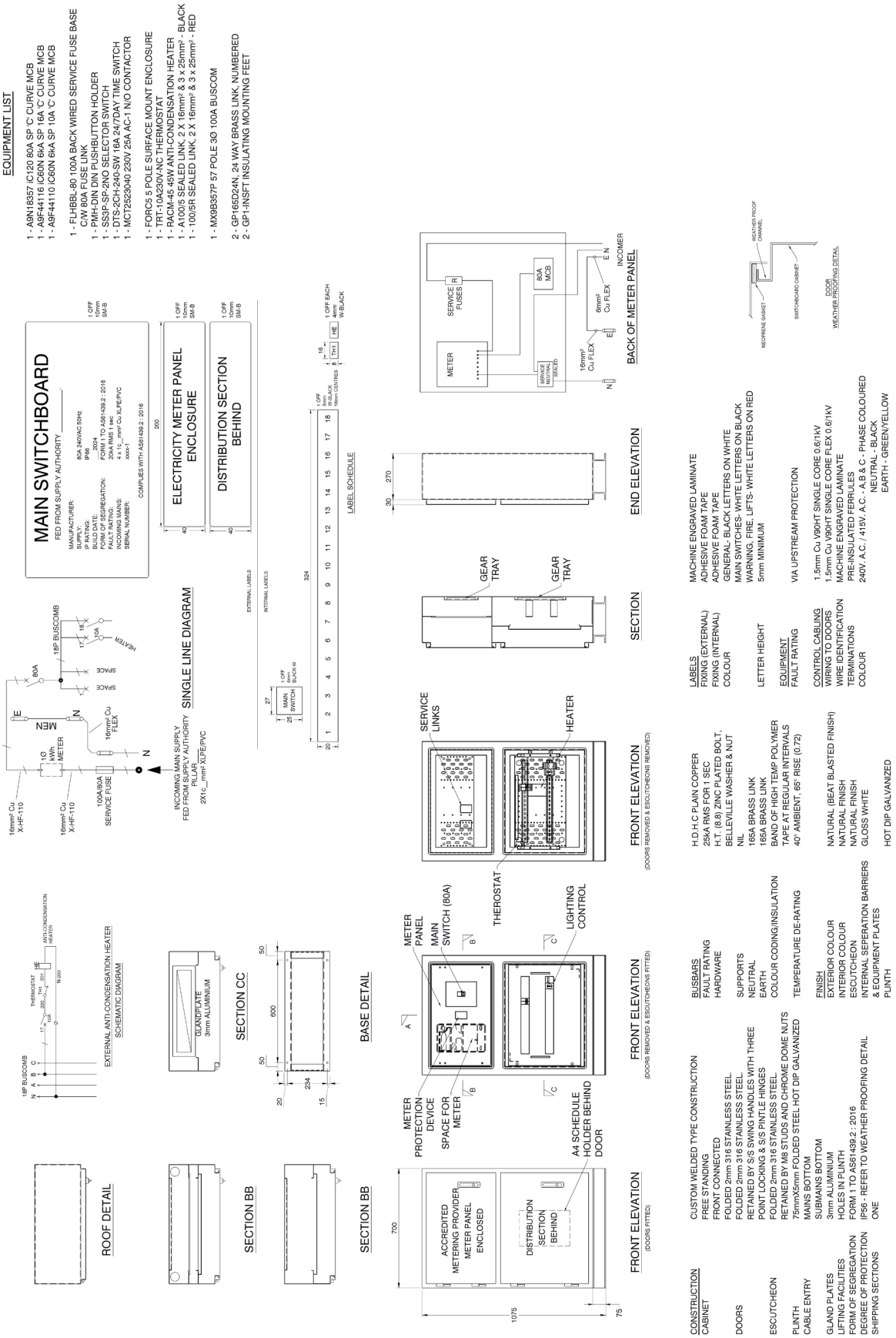
DETAILS OF NEW LIGHTING INSTALLATION INSPECTION TEST AND COMPLETION CERTIFICATE, CON'T

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 annexures 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.

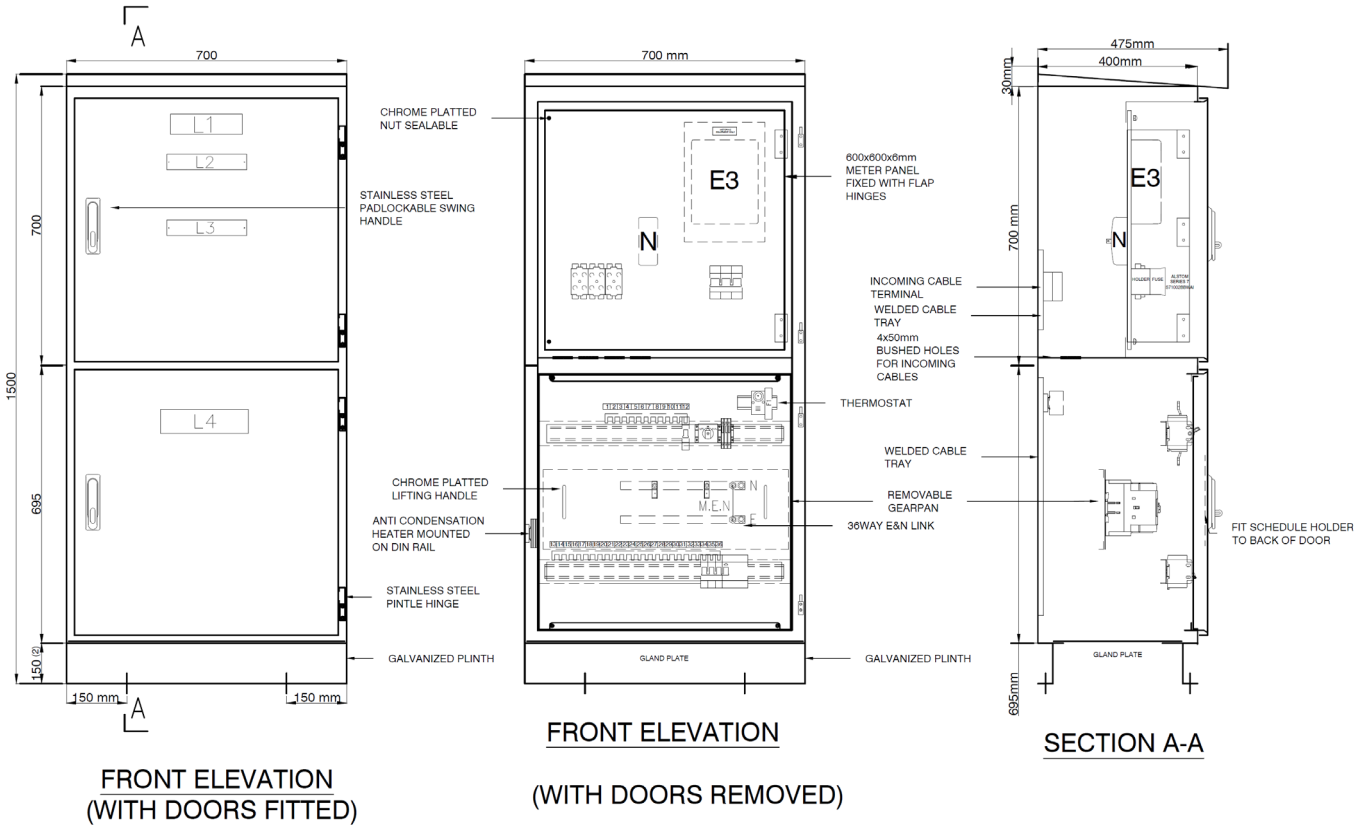
For the inspection and test of the installation at:	
Name: (BLOCK Letters)	Position:
Licence No.:	
Company Name:	
Signature: (of Contractor in BLOCK Letters)	Date:
For and ON Behalf of:	
Address:	
Witnessed by (Name) (Design consultant): (Name in BLOCK letters)	Position:
Signature:	Date:
Comments:	

ANNEXURE 3.1: STANDARD DRAWING FOR SINGLE PHASE MSB



Note: Site-specific shop drawings shall be submitted for approval prior to manufacturing.

ANNEXURE 3.2: THREE PHASE SWITCHBOARD DETAILS & SCHEMATICS (SHEET 1)

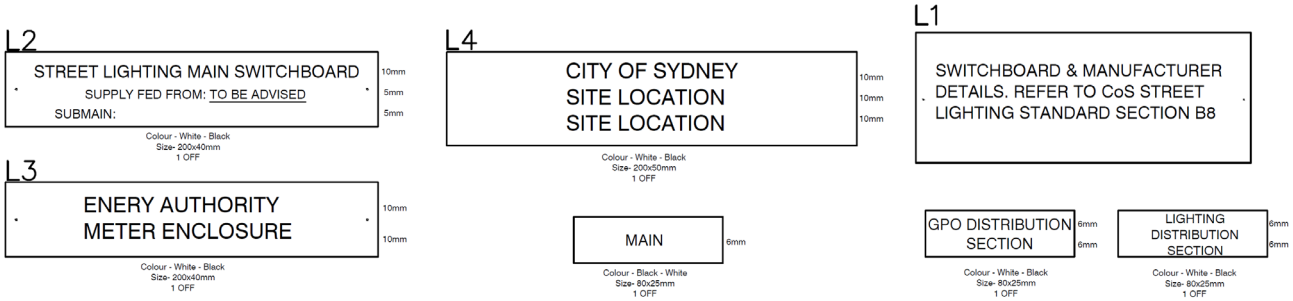


FRONT ELEVATION (WITH DOORS FITTED)

FRONT ELEVATION (WITH DOORS REMOVED)

SECTION A-A

MINOR EQUIPMENT SCHEDULE			
ITEMS	DESCRIPTION REFERENCE	PART NO.	QTY
SERVICE FUSES	IPD SERIES 7 SERVICE FUSE BACK CONNECTION + FUSE LINK	#S71002BBWAI+RHLF100	3
THREE PHASE METER	SUPPLIED AND FITTED BY OTHERS		1
SERVICE METER NEUTRAL LINK	NETEC SEALABLE LINKS 3x35 & 2x16mm	#AN100S-535-B	1
MAIN SWITCH CIRCUIT BREAKER			1
3P 12-WAY COMB BUSBAR	3P 12-WAY 100A COMB BUSBAR WITH ENDCAP	#SN-A9XPH312	1
3P 24-WAY COMB BUSBAR	3P 12-WAY 100A COMB BUSBAR WITH ENDCAP	#SN-A9XPH324	1
36 WAY BRASS LINKS	36 WAY N&E BRIBAR LINKS	#DB-BRASSLINK-36	2
ANTI CONDENSATION HEATER	IPD - 15W ANTICONDENSATION HEATER	#RACP-15	1
THERMOSTAT	IPD - 100 - 250V AC 1NC THERMOSTAT	#TRT-10A230V-NC	1
A-O-M SWITCH	TELUX DIN RAIL MOUNTED 20A NON-LOCABLE 2P SWITCH	#M10HEU1-SMA	1
TERMINAL	TERMINAL 2.5MM GREY	#ACC-TERM-GREY-2.5	3
SS316 PADLOCKABLE HANDLE	SWING HANDLE PADLOCKABLE - SS316	#GEN-HANDLE -SH-PL-316	2
MCB	1P 16A 6kA MCB C - CURVE	#SN-A9F44106	1
RCBO	3P 25A 6kA RCBO 30mA C Curve	#SN-A9F44350	1
RCBO	2P 20A 6kA RCBO 30mA C-CURVE		1

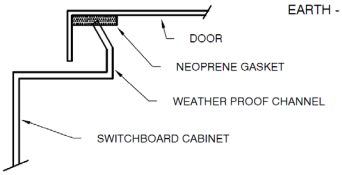


Note: Site-specific shop drawings shall be submitted for approval prior to manufacturing.

ANNEXURE 3.2 Con't. THREE PHASE SWITCHBOARD DETAILS & SCHEMATICS (SHEET 2)

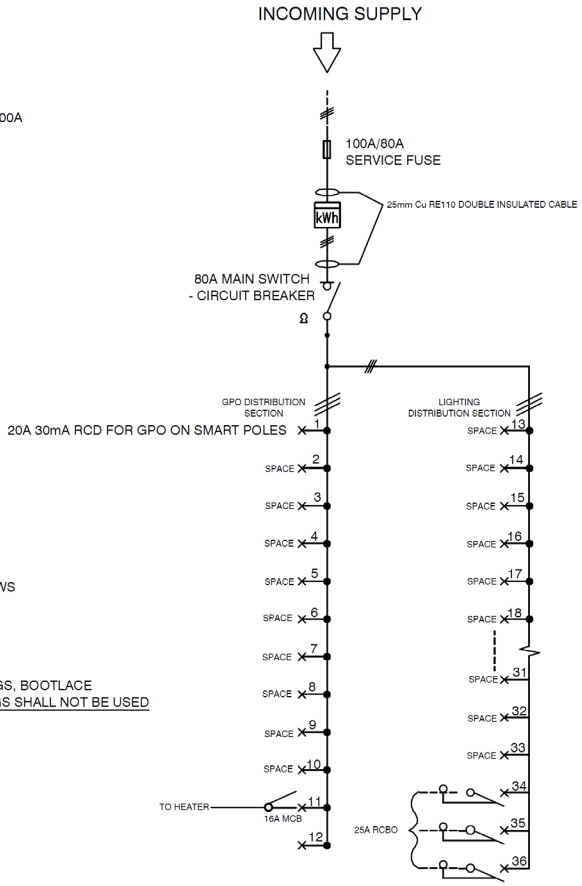
CONSTRUCTION NOTES:

CONSTRUCTION: CABINET:	FLOOR MOUNTED, FRONT CONNECTED, RATED AT 100A 2mm 316 STAINLESS STEEL, FOLDED & WELDED/MODULAR BOLTED CONSTRUCTION
DOORS AND ESCUTCHEONS:	1.5mm GRADE 316 STAINLESS STEEL
OTHER BRACKETS:	1.6mm ZINC SEALED MILD STEEL MIN
BOTTOM GLAND PLATE:	6mm METER PANEL
FORM OF SECREGATION:	FORM 1 - TO AS3439.1 - 2002
DEGREE OF PROTECTION:	IP56 - REFER TO WEATHER PROOFING DETAIL
FAULT RATING:	6kA FOR 1 SECOND
FINISH: PREPERATION:	DE-SCALE & DE-GREASE
EXTENRAL COLOUR:	NATURAL FINISH
INTERNAL COLOUR:	NATURAL FINISH
REMOVALBLE GEAR PANS & ESCUTCHEON:	GLOSS WHITE
PLINTH:	GALVANISED
LABELS: FIXING: COLOUR:	ENGRAVED PLASTIC LAMINATE DOUBLE SIDED ADHESIVE & STAINLESS STEEL SCREWS AS SHOWN
CONTROL WIRING: POWER WIRING: WIRE MARKERS: TERMINATIONS:	MINIMUM 1.5mm Cu V90 MINIMUM 2.5mm Cu RE110 DOUBLE INSULATED STANDARD FERRULES BARE CABLE ENDS. WHERE TERMINALS REQUIRE LUGS, BOOTLACE FERRULES OR PRE-INSULATED RING LUGS. FORK LUGS SHALL NOT BE USED
COLOUR:	240 AC - PHASE COLOURED NEUTRAL - BLACK EARTH - GREEN/YELLOW



WEATHER PROOFING DETAIL

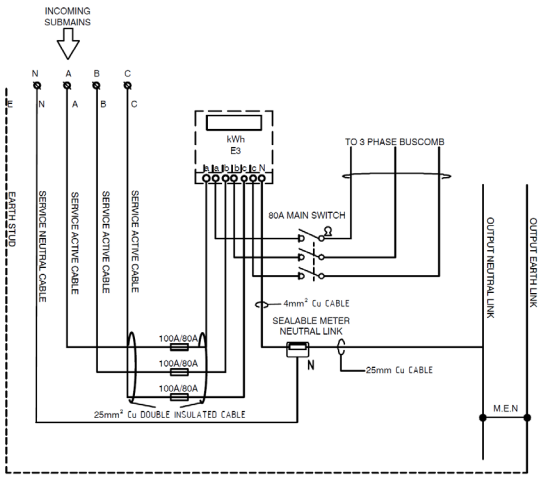
1 OFF



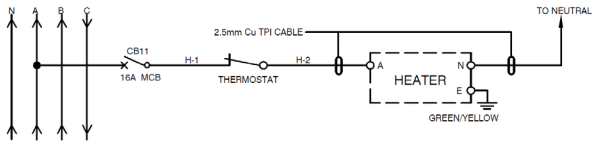
SINGLE LINE DIAGRAM

NOTES:

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

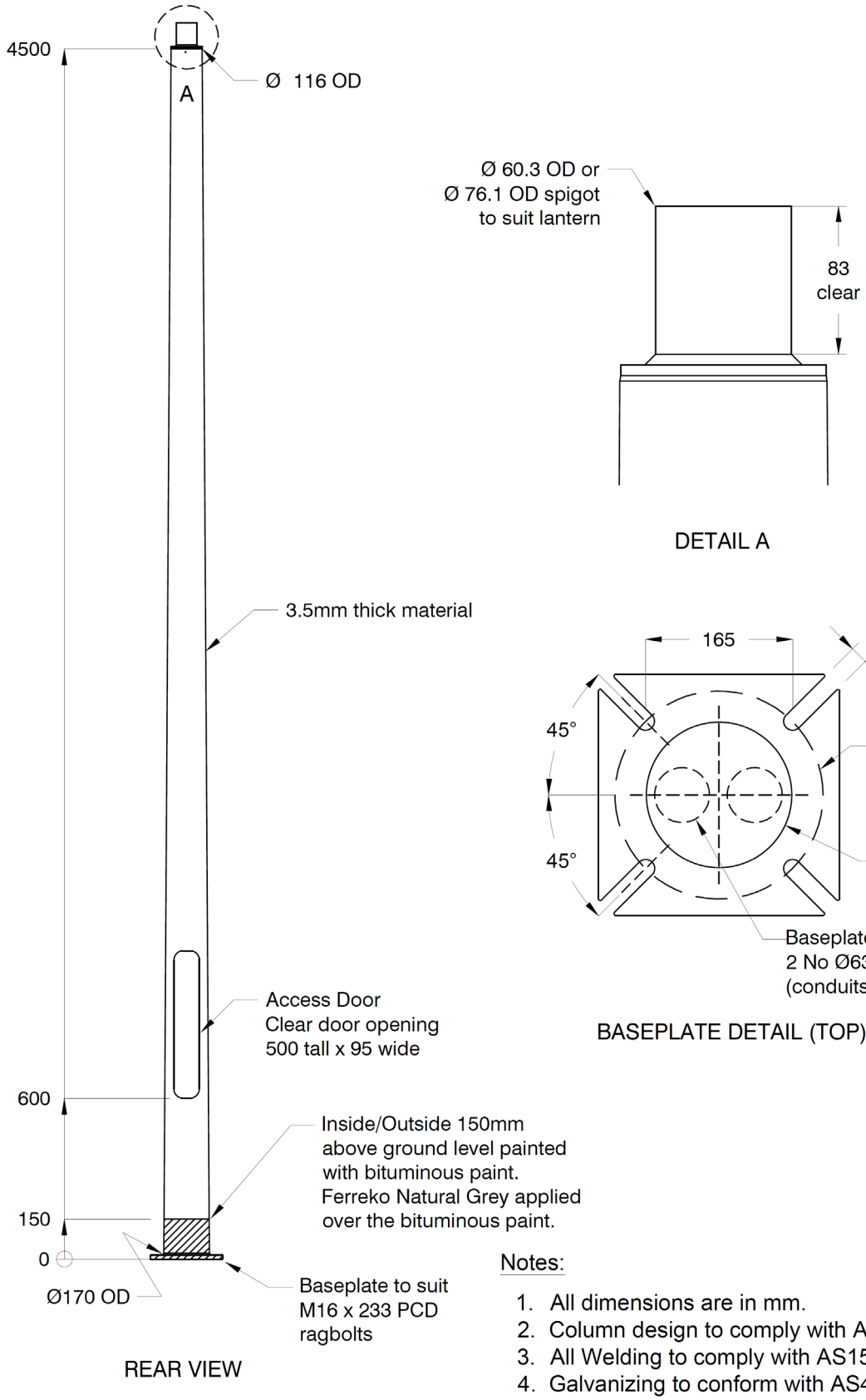


E3 METER WIRING SCHEMATIC

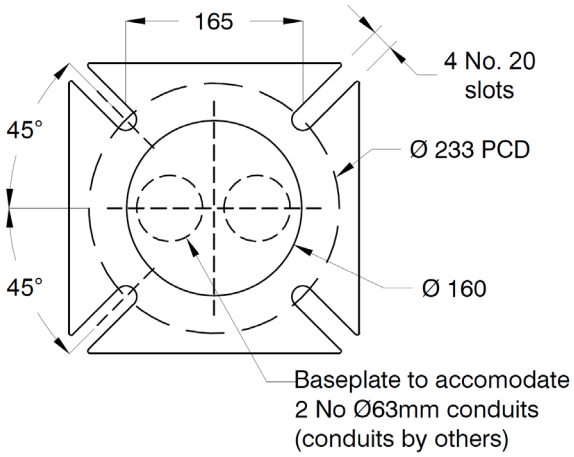


ANTICONDENSATION HEATER SCHEMATIC DIAGRAM

ANNEXURE 4.1: STANDARD DRAWING FOR TAPERED PEDESTRIAN POLE (4.5M)



DETAIL A



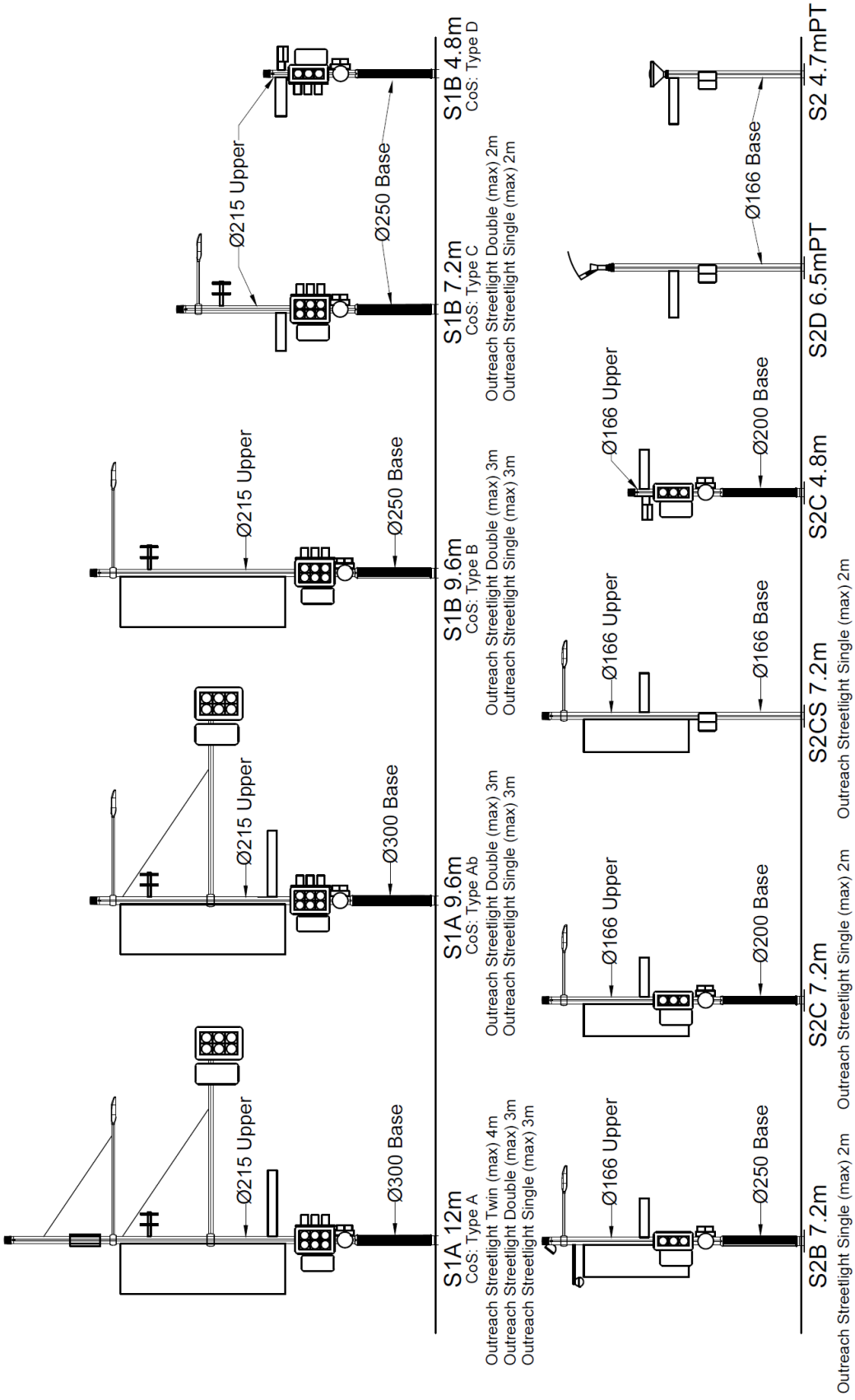
BASEPLATE DETAIL (TOP)

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 conform with AS4680.
5. Paint finish to AS3887 category long term.

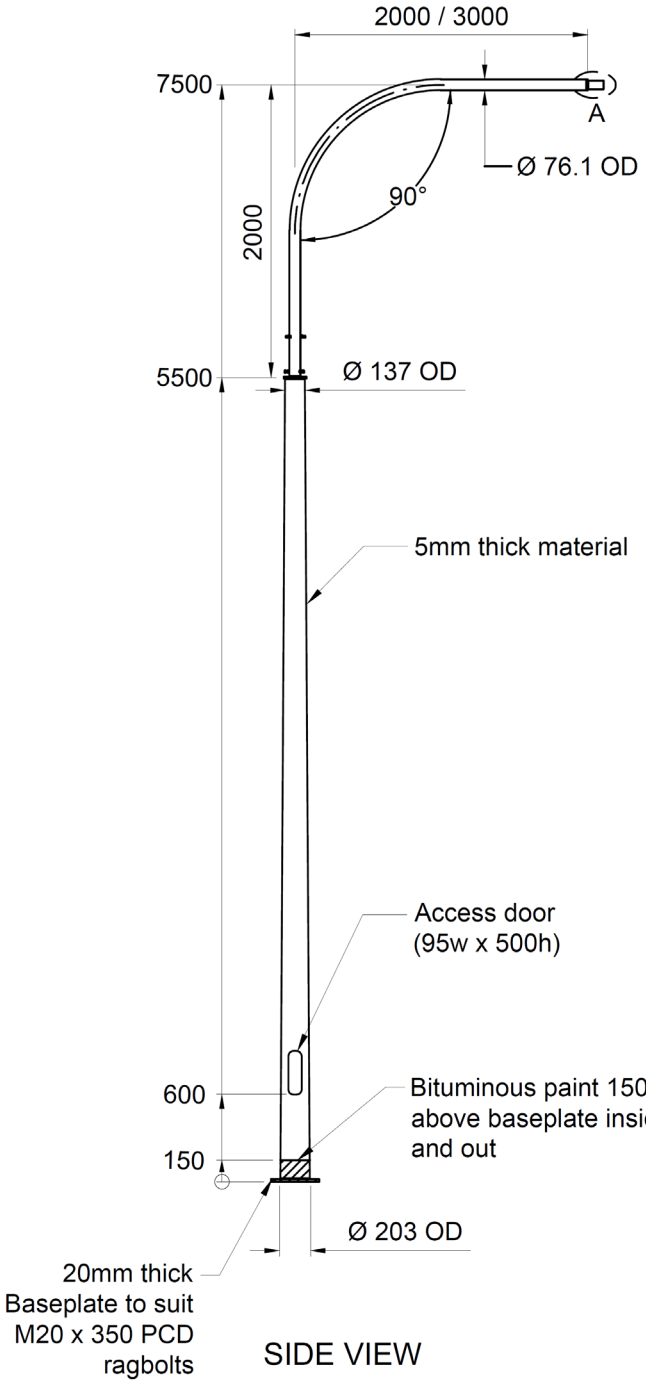
Note: Site-specific shop drawings shall be submitted for approval prior to manufacturing.

ANNEXURE 4.2: STANDARD DRAWING FOR SMART POLES

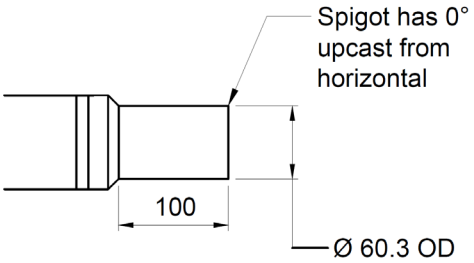


Note: Site-specific shop drawings shall be submitted for approval prior to manufacturing.

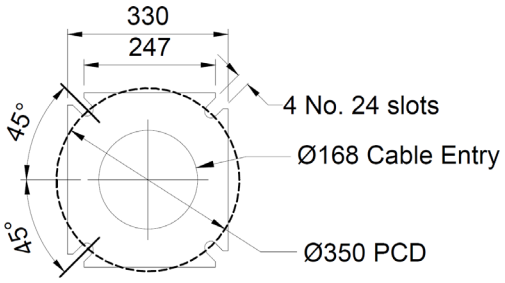
ANNEXURE 4.3: STANDARD DRAWING FOR GALVANISED STEEL STREET LIGHT POLE



SIDE VIEW



DETAIL A



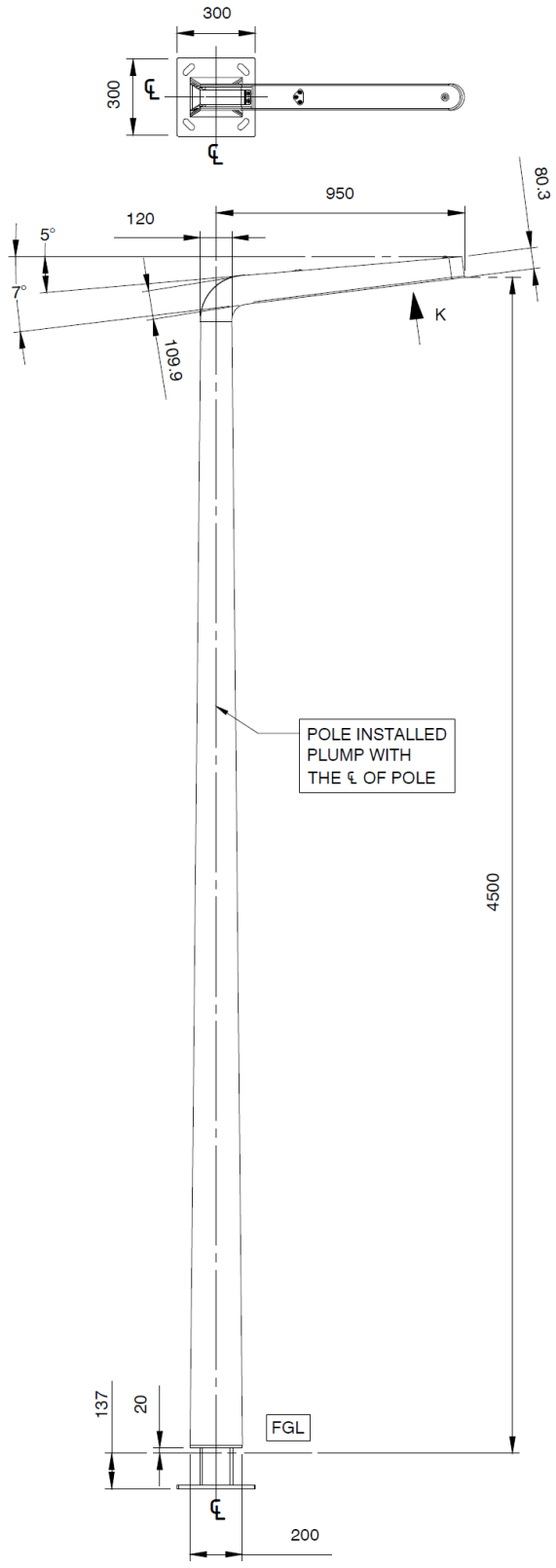
BASEPLATE DETAIL (TOP)

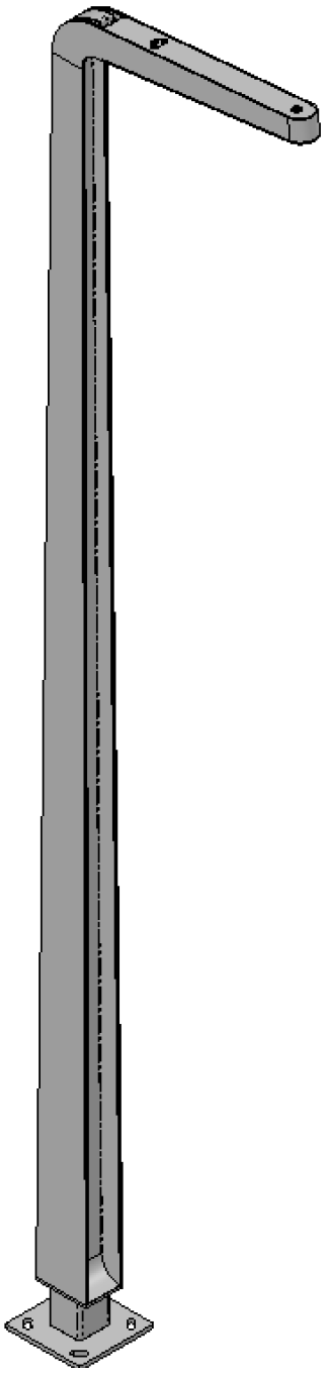
Notes:

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

Note: Site-specific shop drawings shall be submitted for approval prior to manufacturing.

ANNEXURE 4.4: STANDARD DRAWING FOR PEDESTRIAN LIGHT POLE

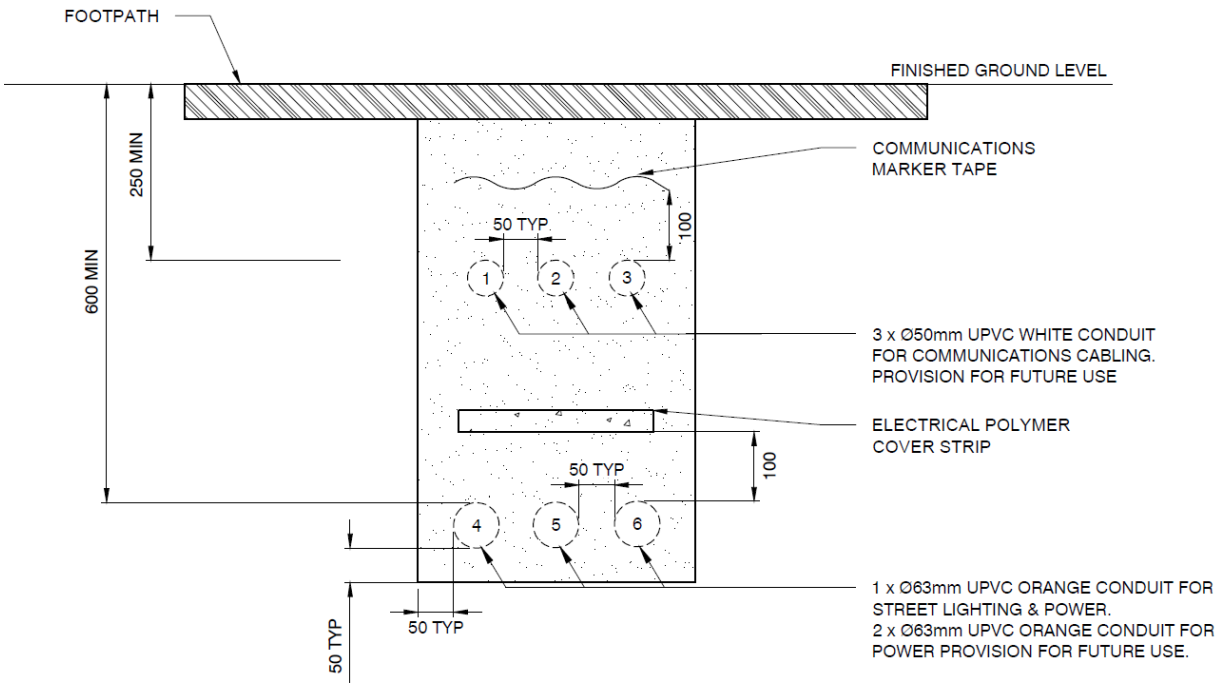




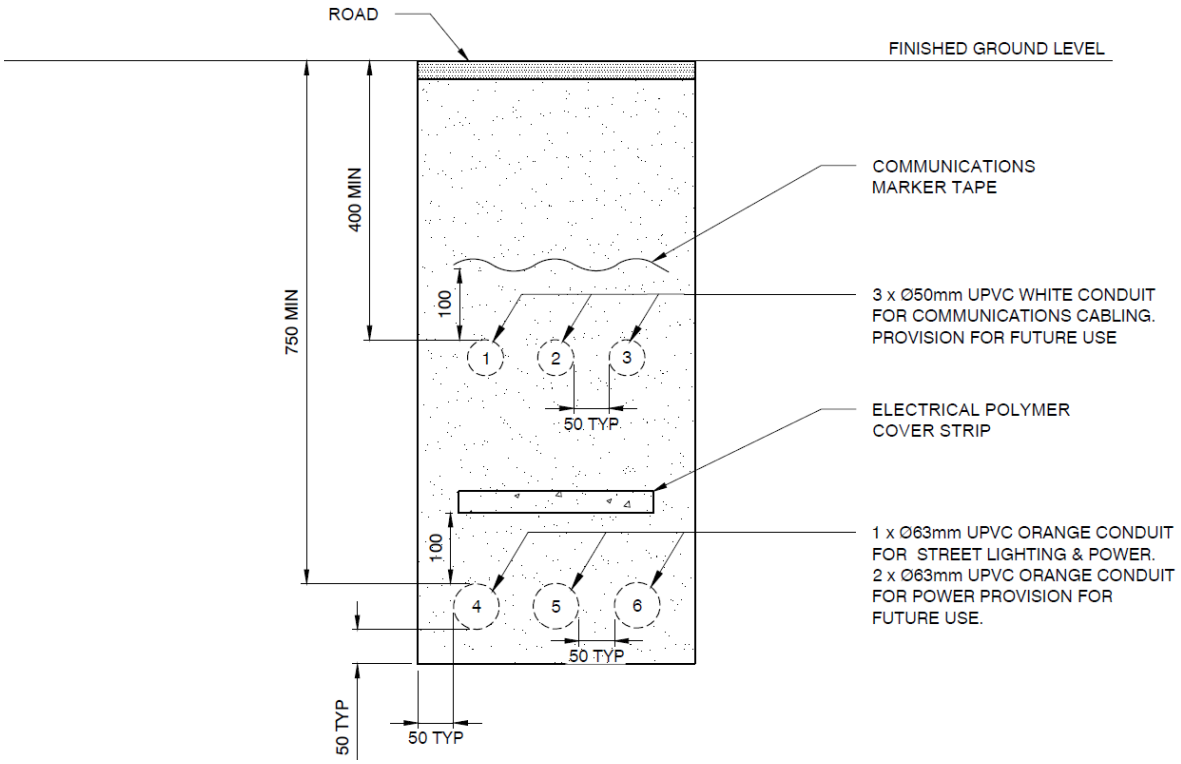
ISOMETRIC VIEW

ANNEXURE 5: TYPICAL ELECTRICAL AND COMMS CONDUIT ARRANGEMENTS

TYPICAL ELECTRICAL & COMMS CONDUIT ARRANGEMENT (FOOTPATH & GARDEN AREA)

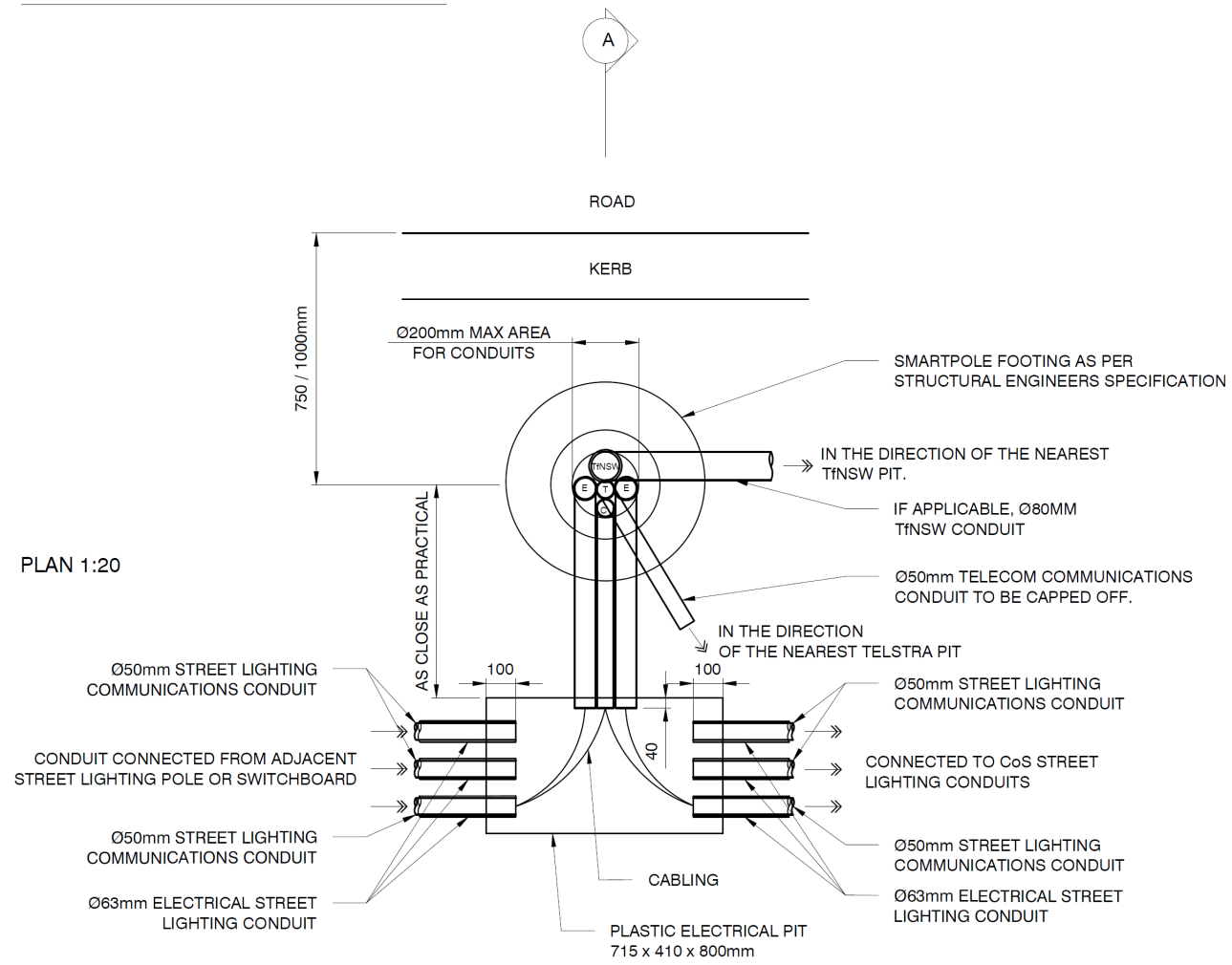


TYPICAL ELECTRICAL & COMMS CONDUIT ARRANGEMENT (ROAD)

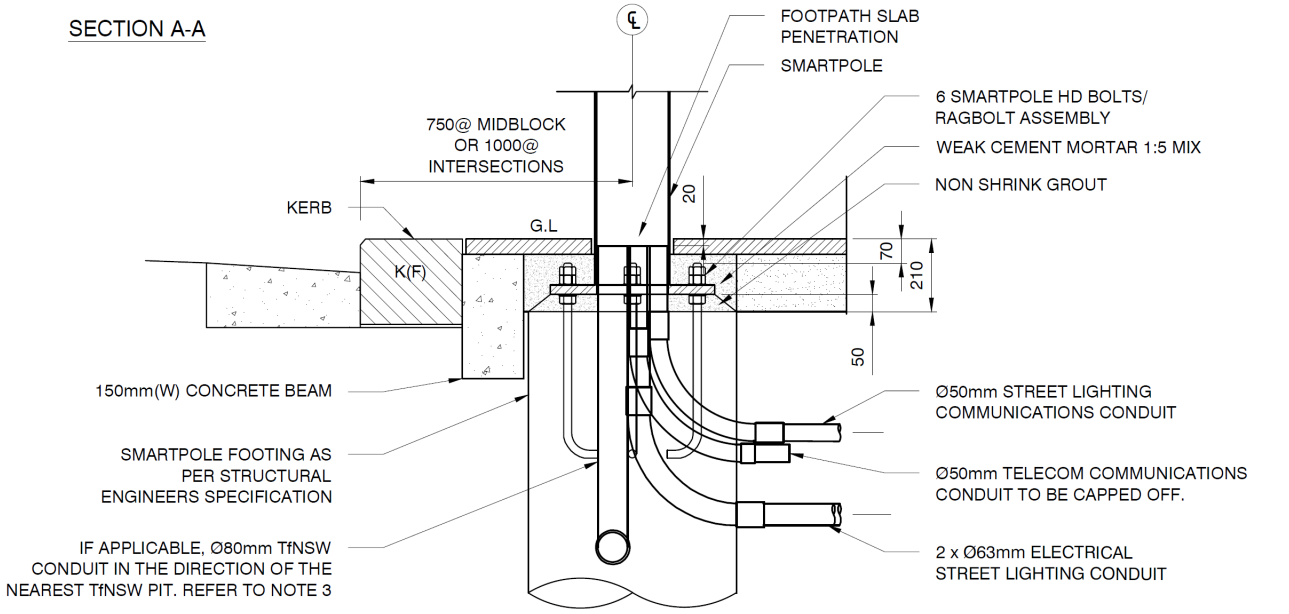


ANNEXURE 6: CONDUITS ARRANGEMENT AT THE BASE OF SMARTPOLES

CONDUIT ARRANGEMENTS AT POLE BASE

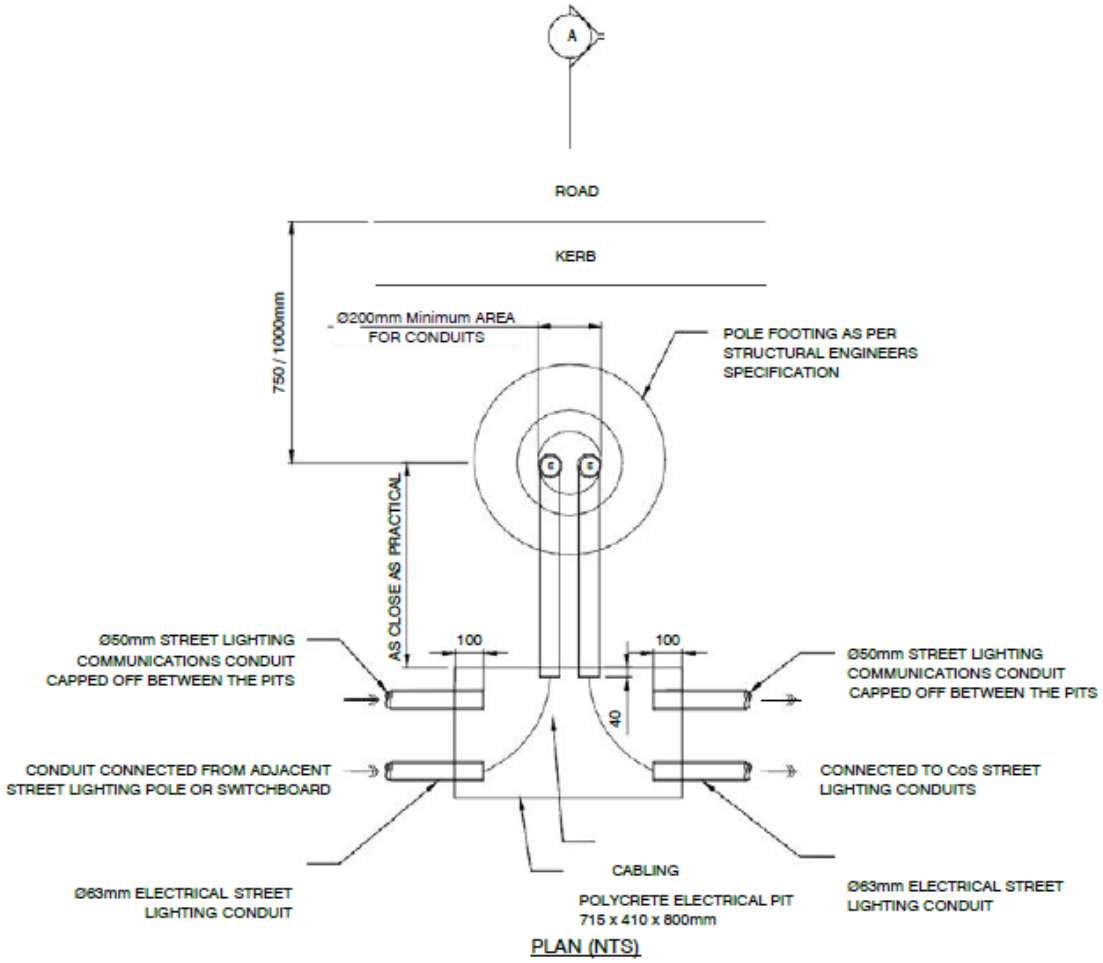


SECTION A-A

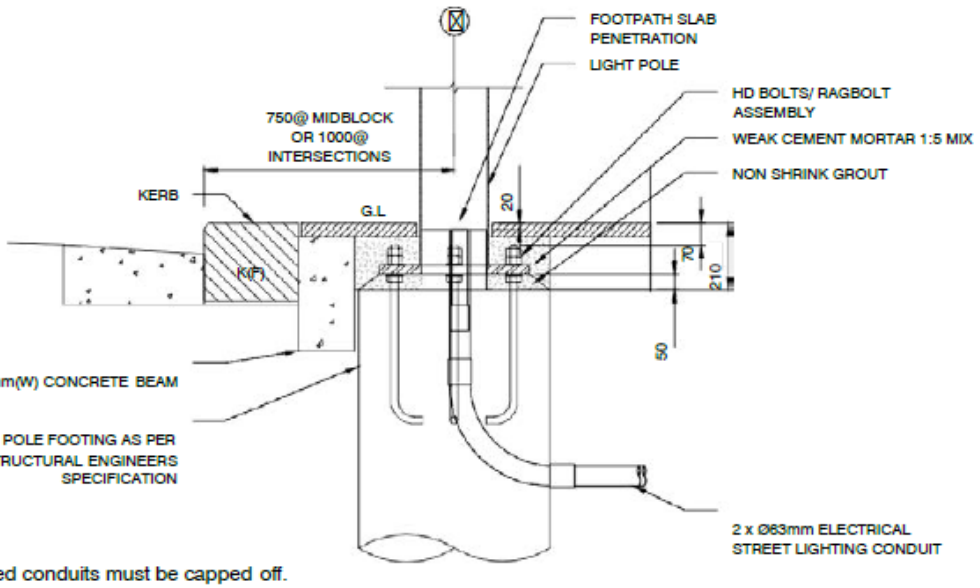


ANNEXURE 7: CONDUITS ARRANGEMENT AT THE BASE OF STEEL OR PEDESTRIAN POLES

CONDUIT ARRANGEMENTS AT POLE BASE



PLAN (NTS)



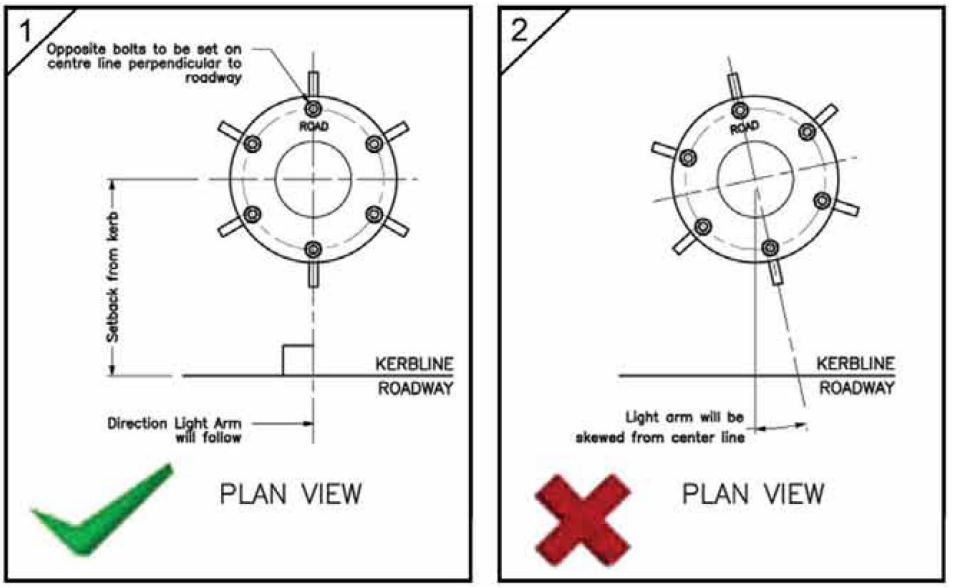
NOTES:

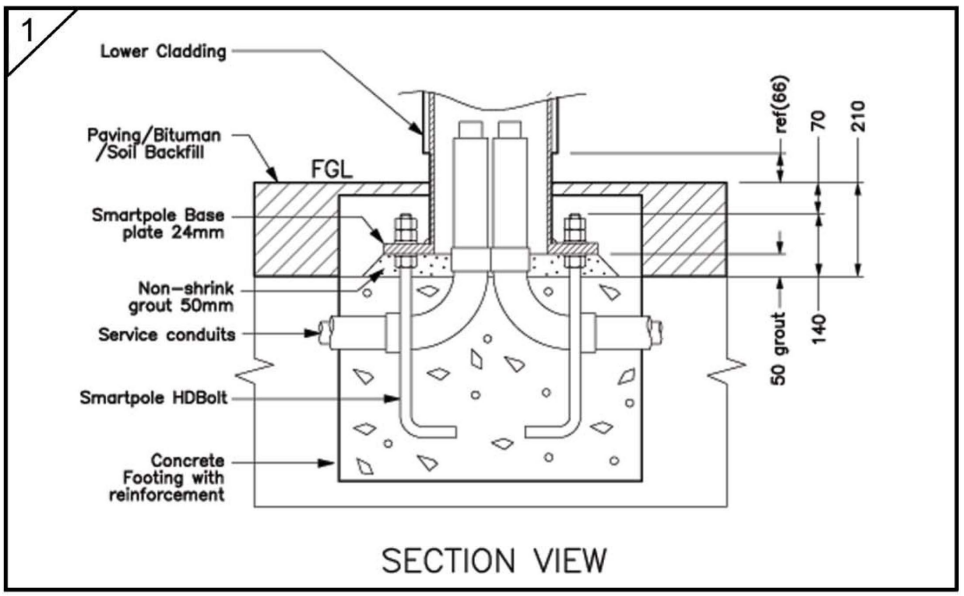
1. All unused conduits must be capped off.
2. Root barriers must be installed in trenches in close proximity to tree roots.
3. All dimensions are in mm.

SECTION A-A

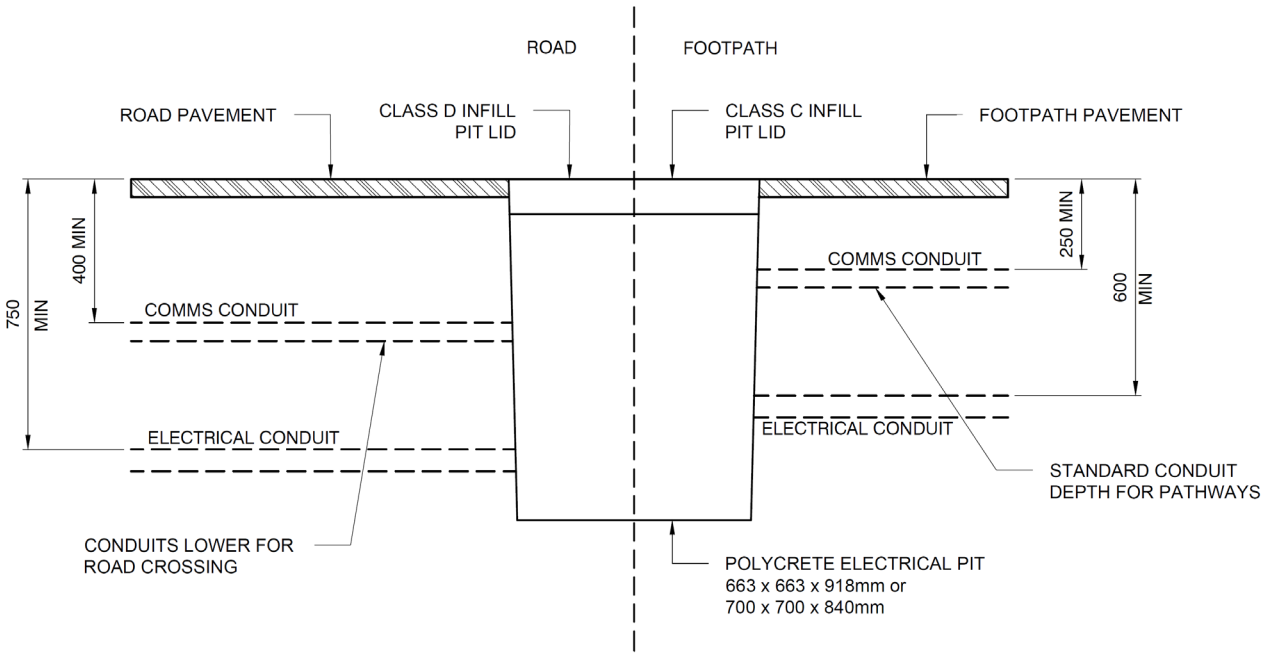
NTS

ANNEXURE 8: SMART POLE HD BOLT SETUP



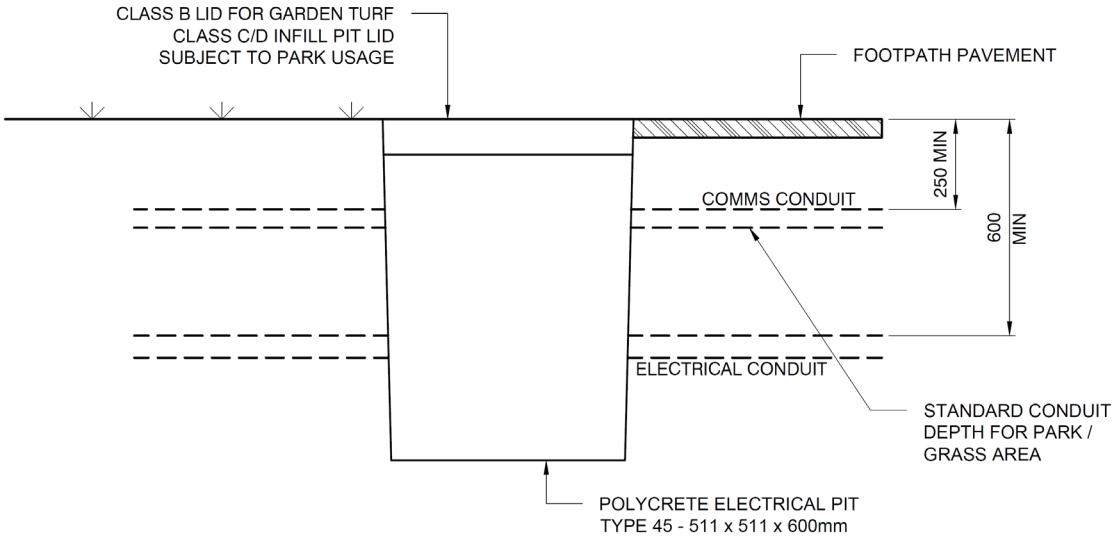


ANNEXURE 9: GENERAL ELECTRICAL PIT ARRANGEMENT



ELECTRICAL PIT ARRANGEMENT FOR ROAD / FOOTPATH

SCALE 1:20



ELECTRICAL PIT ARRANGEMENT FOR PARKS

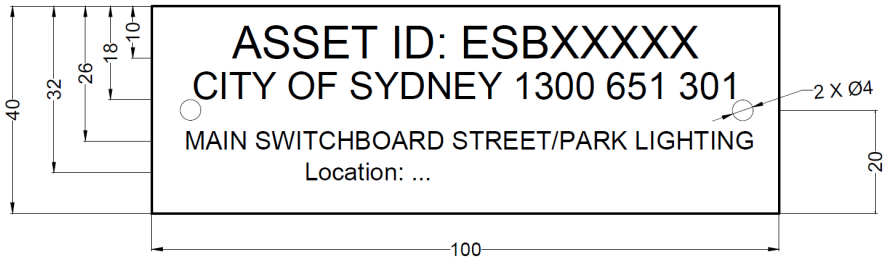
SCALE 1:20

NOTES:
1. PIT LID IS TO HAVE A 75mm DIAMETER STAINLESS STELL DISC ENGRAVED "CoS-Electrical" SET FLUSH WITH LID SURFACE USING EPOXY ADHESIVE. THIS DISC SHOULD BE SLIP RESISTANT.
2. REFER TO THE MANUFACTURER INSTALLATION INSTRUCTION FOR COMPLETE DETAILS
3. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED

.

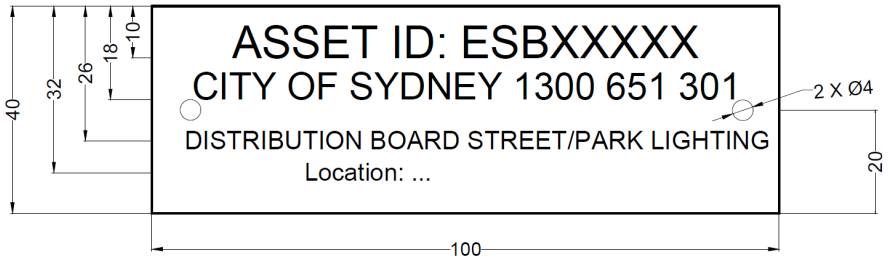
ANNEXURE 10: ASSET ID PLATE DETAILS

MSB ID PLATE



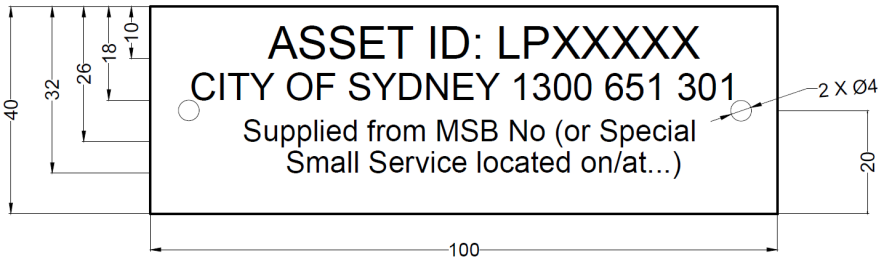
MSB ID PLATE DETAILS

DB ID PLATE



DB ID PLATE DETAILS

POLE ID PLATE



POLE ID PLATE DETAILS

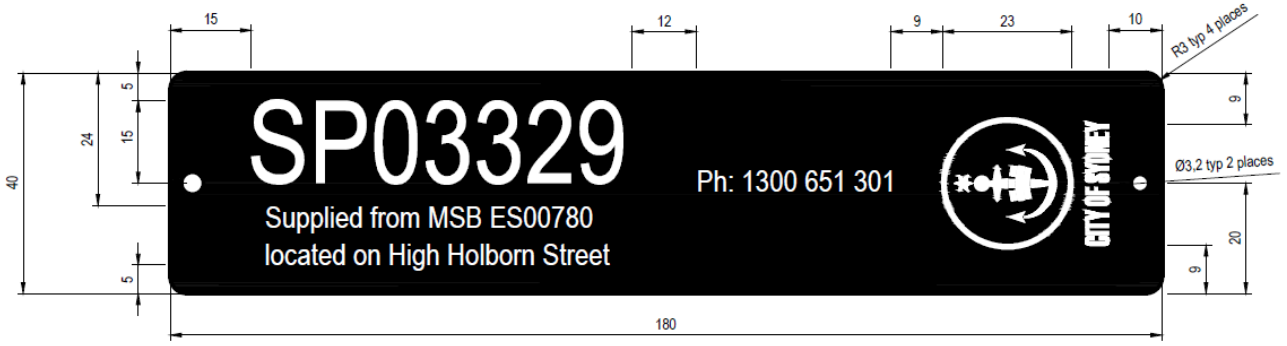
NOTES:

- 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
- DENOTES SPACE FOR THE 5TH 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

ANNEXURE 10 Con't. ASSET ID PLATE DETAILS

SMART POLE ID PLATE DETAILS

SMARTPOLE ID PLATE



PLAN VIEW

FRONT VIEW

NOTES:

- ARIAL 15mm HIGH FOR SMARTPOLE ID TEXT
- ARIAL NARROW 4mm HIGH FOR TELEPHONE NUMBER TEXT
- ARIAL NARROW 4mm HIGH FOR MSB ID AND LOCATION TEXT
- PLATE MATERIAL IS 0.8mm THICK BLACK ANODISED ALUMINIUM SHEET
- PLATE IS FITTED WITH 2 STAINLESS STEEL RIVETS OR SELF DRILLING SCREWS
- TEXT TO BE LASER ETCHED

ANNEXURE 11: LUMINAIRE INFORMATION MINIMUM REQUIREMENTS

Item	Description	Minimum Requirement	Units/Format
1	Maximum spacing achievable in meeting lighting design specification	Lighting design calculations to AS/NZS1158 Part 3.1 & Part 1.1 (AGi32 or Perfect Lite) to provide evidence of luminaire performance declared (including for shielding options)	m
2	Luminaire – Brand, Type & Model No.	Luminaire brand, type and explicit model numbering to be provided	Descriptionin text
3	Luminaire System Wattage	Total luminaire system Wattage to be provided	W
4	Luminaire Initial Lumen Output	Total luminaire initial lumen output to be provided	lm
5	Luminaire System Efficacy(As per LM-79)	Total luminaire system efficacy to be provided	lm/W
6	LED Module – Brand, Type & Model	LED model brand, type and explicit model numbering to be provided	Description in text
7	Rated Life of LED ModuleHours at L70	LED model lifetime operating hours to 70% ofinitial lumen output	hrs@L70
8	Correlated Colour Temperature	4000K	K
9	Colour Rendering Index	75+ Ra	Ra
10	Chromaticity Tolerance - Average Chromaticity Shift (Δu'v') at 6,000 hours	As per SA/SNZ TS 1158.6 Table 5.3	Δu'v' and tolerance
11	Provide options for glare control devices including unit price	It is preferable to have extra glare control options available (e.g. to address front, rear, front & rear and all around shielding needs)	Y/N
12	Power Supply (Driver) Brand, Type, Model	Power supply brand, type and explicit model numbering to be provided	Description in text
13	Power Supply Dimming& Constant Light Output Capability	DALI 2.0 dimmable power supply required withconstant light output capability. 0-10V Zhaga Book 18 power supplies compatible withDALI 2.0	Y/N
14	Power Supply Programming	Is manufacturer willing to pre-program DALI2.0-enabled power supplies with asset management data to a pre-agreed format?	Y/N

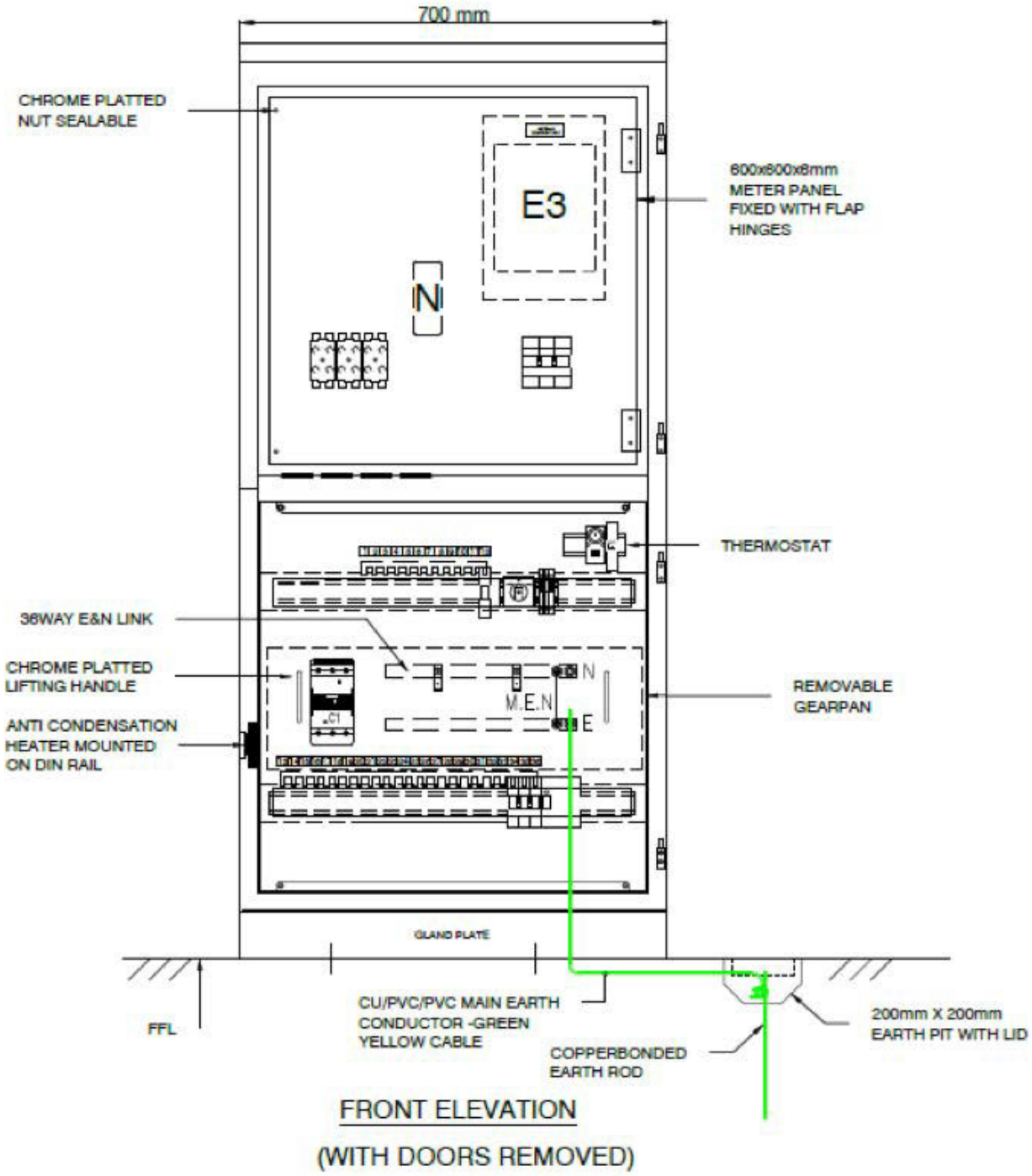
Item	Description	Minimum Requirement	Units/Format
15	Smart Controls and Smart City Readiness	NEMA/ANSI 7-contact socket and, where ZhagaBook 18 compliant interfaces are provided, these should be wired such that both NEMA/ ANSI 7 and Zhaga devices can control LED module switching and dimming.	Y/N
16	Surge Protection Device	20kV / 10kA	kV / kA
17	Ambient Operating Temp Range	To be stated	-XºC & +YºC
18	Rated Life of Power Supply	100,000 hours or more preferred	X hrs. with y% total failure rate
19	Predicated Power Supply Failure Rate	0.2% per 1000 operating hours	% failure expected per 1000 hours (Based on Telcordia
20	LED Drive Current	To be stated	mA
21	Electrical Class	Class I (single insulated) Class II (double insulated)	Y / N Y / N
22	IP Rating – Optical Module	IP66 preferred, IP65 minimum	IPXX
23	IP Rating – Gear Chamber	IP65 minimum	IPXX
24	IP Rating – Power Supply	IP66 preferred, IP65 minimum unless power supply is located within a gear chamber that is IP65 or greater	IPXX
25	Luminaire Body - Aluminium Alloy – Max Copper Content	As per as per SA/SNZ TS 1158.6 2.3.1 If cast or extruded aluminium alloy, LM6 grade alloy or better shall be used unless the manufacturer can provide acceptable evidenceof performance outcomes for a differing alloy composition.	%
26	Luminaire Body Finish	Luminaire to be unpainted, Have all stainless steel fittingspre-greased Have regard to the galvanic series and provide a full list of metal components used in the luminaire along with commentary on the corrosion susceptibility of these materialcombinations Composite materials that are exposed to sunlight UVb tested to a minimum of 2000 hours	Y/N Y/N Descriptionin text Y/N

Item	Description	Minimum Requirement	Units/Format
27	Luminaire Dimensions	Luminaire dimensions to be provided	L x W x H in mm
28	Luminaire IK Rating	Minimum impact resistance (IK) ratingof IK08.	IK0X
29	Wiring connection chamber	Have control gear/wiring connection chamberaccessible without the use of tools. Have removable covers secured to fitting in open position and self-supporting during connection/maintenance	Y/N Y/N
30	Smart Controls Readiness	Top or bottom mounting acceptable. Preference is for luminaires with both NEMA/ ANSI C136.41 compliant 7-contact and ZhagaBook 18 compliant interface	Descriptionin text
31	ROHS 2 Environmental Compliance	ROHS 2 environmental compliance preferred Suppliers are required to comment on environmental soundness of design and materials used in the manufacture of items offered. In particular, reference to: a) Management of waste reduction. b) The use of re-usable and/or recyclable packing. c) Extended producer responsibility for safe recycling or disposal of materials at the end of their life.	Y/N
32	Does the luminaire have an existing approval under the NSWEnergy Savings Scheme?	Approval or willingness to seek approval (if required under ESS Rules)	Y/N (If N, state willingnessto apply for approval)
33	Luminaire optic/lens UV stabilisation method	Substantiation that degradation is insignificantover useful lifetime	Descriptionin text
34	No Moving Parts	All luminaires shall have no moving parts (forexample fans for thermal management)	Indicate Y/N
35	Component Fixing Devices	Toggle latches, catches, clips and hinges shall be stainless steel of not less than grade 304. In order to avoid electrolysis corrosion, brass andother copper alloys shall not be used in contact with aluminium or aluminium alloy. Control gear/terminal block chamber shall be accessible without the use of tools. Where toggle latches are used to secure an external supplementary visor, they shall be capable of maintaining the IP rating of the optical chamber	Indicate Y/N foreach item

Item	Description	Minimum Requirement	Units/Format
		throughout the design life of the luminaire as well as beingcapable of resisting inadvertent opening by animals.	
36	Supporting Documentation (Provide ID number for relevant file)	Confirm that the following documentation and supporting material (with test reports from a NATA-accredited laboratory or a laboratory whose accreditation is recognised by NATA under the mutual recognition scheme) is available if your product is short listed: 1. Product brochures, technical data sheets (excerpts only, as applicable to the specific product) and dimensioned drawings. Do not provide full range catalogue. 2. IES LM-79 test report 3. IES LM-80 and IES TM-21 calculations and extrapolations 4. Test report or material batch evidence of aluminium alloy copper content 5. Ingress protection test report as per the requirements of AS/NZS60598.1 6. Resistance to external mechanical impact as per AS/NZS 60598.2.3 7. Impulse voltage test as per Clause 5.5 of SA/SNZ TS 1158.6 8. Thermal endurance and thermal testingrequirements as per Clause 5.6 of SA/SNZ TS 1158.6 9. Lens material datasheets demonstratingUV stability 10. A luminous intensity distribution Table(I - Table) for the luminaire in CIE andIES file formats corresponding to the LM-79 report provided 11. Photometric file (IES or CIE) 12. Perfect Lite or AGi32 sampleinstallation analysis including a summary table for inputs todemonstrate conformance 13. A polar diagram clearly identifying peak intensity at 70, 75 and 80 in cd 14. ISTMT (In-SITU Temperature Measurement Test) report 15. One operational demonstration sample luminaire of the exact specification tendered, wired in an electrically safe manner with 3m of electrical flex and 3-Pin mains plug 16. Supplier's current Quality Assurance accreditation certificate in conformity	Indicate Y/N for each item (and explanationfor each negative response)

Item	Description	Minimum Requirement	Units/Format
		with AS/NZS ISO 9001 or equivalent international standard. 17. The supplier shall provide with the offer information on: a. The period of service achieved by items offered within Australian service conditions. b. Customers who have a service history of the items offered. c. Contact names and phone numbers of relevant employees of those customers who can verify the service performance claimed. 18. Requirements beyond the scope of SA/SNZ TS 1158.6: a. Insulation Resistance Test – Clause 8.3.1 of AS/NZS 3100 b. Insulation resistance shall be measured at a voltage of 500 V d.c. c. The resistance between live parts and the external metallic body shall be not less than 1 MΩ d. High Voltage (Electric Strength Test) – Clause 8.4.2 of AS/NZS 3100 e. Test shall be applied as per clause 8.4.5 of AS/NZS 3100 and there shall be no disruptive discharges, that is, flashovers of insulation punctures during any high voltage test f. Spectral distribution graph	

ANNEXURE 12: MAIN EARTHING SCHEMATICS



FRONT ELEVATION

(WITH DOORS REMOVED)

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH 5.13 MAIN EARTHING REQUIREMENTS.
2. EARTH CABLE SHALL BE RUN IN DIA PVC RIGID HD CONDUIT.
3. EXPOSED EARTH ELECTRODE AND CLAMP TO BE GALVANISED.
4. MAIN EARTH CONDUCTOR SIZE TO BE CALCULATED BASED ON THE FAULT LEVEL
5. EXPOSED EARTH ELECTRODE TO BE INSTALLED IN A PVC CONDUIT

EARTH PIT PHOTO

CITY OF SYDNEY