



**Public Lighting Office**

**Roads & Traffic Management**

**City Hall**

**Cork**

**Exterior Lighting Design Requirements, Guidance &  
Specification Manual for Lighting Equipment Supply,  
Installation & Maintenance**

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**We are Cork.**

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## **1 Introduction**

Cork City Council is seeking to foster coordination and consistency in design for the installation and maintenance of high quality street lighting throughout the urban and sub-urban area in Cork City. This document outlines the minimum standard for lighting schemes in Cork City to provide high quality, energy efficient, future proofed road lighting for public lighting in Cork City.

Lighting is a highly valued and visible service with the potential to make a significant contribution to the wider corporate objectives prepared by Cork City Council. The Manual has accordingly been developed to follow closely the principles of Best Value, to facilitate the conduct of Best Value reviews involving public lighting, and to provide a stimulus to the pursuit of continuous improvement.

Well maintained road lighting can change our communities, make the night-time environment a safer place to be, encourage regeneration and investment, leading to an improved local economy and at the same time contributing to a more inclusive society. However, these benefits are only achievable if the right decisions are made. This Code comprises a framework of guidance and standards, the application of which will make a significant contribution to the decision making process.

All queries pertaining to the design and maintenance of exterior lighting installations in Cork City should be directed to Cork City Council, Transportation Division as detailed on the cover sheet of these guidelines.

Cork City Council is certified under ISO 50001 and has an underlying commitment to reduce energy consumption. In this context public lighting would be seen as a significant energy user (SEU) for the organisation. Public lighting, nationally as a sector has an opportunity to reduce energy and help energy efficiency programme to meet 2030 target to reduce CO2 equivalent emissions by 30% and improve energy efficiency by 50%.

### **1.1 Cork City Public Lighting Framework**

#### **1.1.1 Vision**

Cork City Council's vision for the public lighting network will be to deliver a quality public lighting service which endeavours to maintain all its assets in accordance with best industry practices to ensure a reliable and safe and fit for purpose public lighting network with available resources.

#### **1.1.2 The Mission of Cork City Council**

Cork City is a city with ambition, working with our neighbourhoods and communities to assist the sustainable economic development of the City and ensure that Cork continues to be a successful and attractive place to live and work.

Our mission includes the following aims:

1. To ensure a high-quality maintenance service through quality design, collaborations

and partnerships, investing in an electrically safe and sustainable network for our citizens.

2. To engrain the principles of asset management in the network ensuring value for money, customer centric solutions and a targeted approach to upgrading life expired assets in the network that are safe, sustainable and reduce energy consumption.
3. To enhance the living, working and cultural environment of the city by upgrading life-expired assets providing a safe and inviting atmosphere that reinforces Ireland’s second city identity for present and future generations.

### 1.1.3 The Principles

The guiding principles of Cork City Council’s public lighting department are as follows; -

#### Asset Management

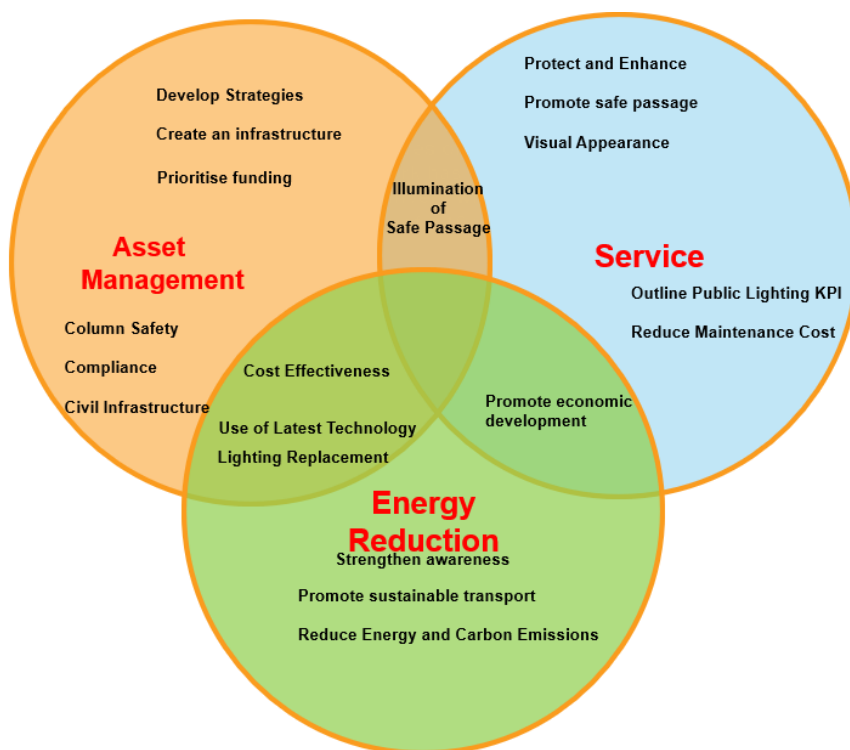
- A systematic process, custom developed for the needs of Cork City to develop, operate, maintain, upgrade, and dispose of assets in the most cost-effective manner including all costs, risks and performance attribute.

#### Service

- High-quality maintenance service through quality design, collaborations and partnerships, investing in an electrically safe and sustainable network.

#### Energy Reduction

- Lower the urban lighting energy and carbon consumption in the city with well-designed public lighting and the procurement of low energy equipment and systems using the latest technologies.





## 1.2 Public Lighting Philosophy

The provision of street lighting and other items of illuminated street furniture should support the key aims of the Cork City Council's Corporate Plan.

Cork City Council is seeking to ensure that lighting equipment is selected from the higher quality grade, as against the standard range, of equipment available from various exterior lighting or street lighting manufacturers to enhance the streetscape, ensure longevity and provide an energy efficient lighting scheme.

The lighting design for all new schemes and modifications to existing developments must cater for the need to up-grade lighting on existing junctions, entrances and access roads in addition to any lighting being provided for the development.

Where suitable, low brightness energy efficient lighting schemes should be considered with a view to enhancing the nighttime scene and improved security with attractive modern street furniture. Cork City Council, Transportation Division shall be consulted at the design stage in this regard.



**The aim of this document is to provide a structured and consistent approach to the provision of street lighting**

It is a core value of Council to ensure that the City develops in a manner which does not compromise the quality of the life or economic prospects of future generations.

To achieve a structured and coherent approach to the provision of lighting on the public highway the correct levels and associated parameters for the lighting for each specific class of road, street, footpath, cycle track etc. must be determined. Such determination should take account of: -

- the use of the road, for vehicular, cycle and pedestrian traffic,
- local amenities such as leisure centres, schools, churches, village halls, shops, public houses, doctors' surgeries etc. which may affect the night-time use of the road
- The location of the road, rural, urban etc.
- the environmental aspects

Each category of road, street, footpath, cycle track etc. will have its own specific requirements, which will affect the level of lighting to be provided. The current British Standards for Road Lighting BS 5489 and BS EN 13201 is utilised for the design of schemes in Cork City.

## 1.3 Benefits of Street Lighting

The appropriate lighting of our road network can positively contribute to a reduction in both the number of and the severity of road traffic accidents.

The application of adequate lighting and using the appropriate light source provides an increase in personal safety, particularly for vulnerable road users.

With recent technological advances in street lighting more energy efficient solutions are

now available in order to reduce revenue costs and minimise impact on the environment.

Optimal Lighting design and replacement of existing street lighting will enhance the night time environment which helps promote the night time economy but also aid energy saving to contribute to achieving the Council's energy reduction targets by 2030.

## 1.4 The Street Lighting Service

### Public Lighting Service Level

Cork City Council is responsible for the maintenance and management of the Highway lighting network in Cork City and have set out clear objectives in the Department's delivery plan, of which two refer to management and maintenance of the Street lighting network. These are:

- Safety, well maintained and resilient
- Energy efficiency and quality of delivery

To achieve these objectives our maintenance strategy is summarized as follows:

- To provide a clear statement of street lighting policies which deliver the statutory obligations of the Authority
- To be responsive to the needs of users and the community
- To contribute to effective street lighting asset management and maintain the asset value, by providing a uniform and consistent approach to maintenance need and resource allocation
- To support and add value to local transport objectives
- To support and add value to wide corporate policy objectives
- To regularly review policies and procedures and monitor the effectiveness of the maintenance strategy.

Cork City Council maintenance provision undertakes to provide the following response times:

Fault Priority	Attendance and Rectification
Emergency Fault	Without delay
Urgent Fault	2 Working Days
Standard Repairs (typically classed as residential areas)	5 working Days
Dual carriage Repairs (typically classed as traffic routes)	30 Working Days

The Transportation Division are committed to the implementation of the principles of ISO 50001 energy management standard.

Refer to [Appendix 16](#) for the process of registering a fault on the public lighting network.

## 1.5 Public Lighting Design

### 1.5.1 Cork City Council's City Centre Movement Strategy

The Council's City Centre Movement Strategy will continue to be a key driver to improving the city centre economy. The movement strategy will attempt to:

*'improve the general vibrancy of Cork City Centre to promote sustained economic growth, to deliver a much more attractive environment for shoppers, visitors and tourists and to help encourage sustained inward investment.'*

The Movement Strategy Objectives are as follows:

- General Vehicular Access
  - Identify a street hierarchy within the city centre to clearly identify the main routes into and through the city centre.
  - Maintain accessibility to the city centre off streetcar parks
  - Manage access for deliveries within the city centre
- Public Transport Movement
  - Deliver a more efficient public transport operating environment
  - Improve the reliability of the existing bus service
- Pedestrian Movement
  - Deliver streets that provide a more pleasant shopping environment
  - Make it easier to cross the city streets at key locations
- Cycling Access
  - Provide a TM system that encourages cycling in the city centre

### 1.5.2 Conservation Areas

Where lighting is to be provided in areas of historic importance the style of equipment and the type of light will be sensitive to the surrounding environment.

Light designers should also pay particular attention to the bats and lighting document produced by the Bat Conservation Trust and the ILP (Guidance Note 08/18). This document aims to create awareness of the impacts of lighting on bats and their migration habits.

### 1.5.3 Light Pollution

As a result of poor lighting design and the application of incorrect levels of light in particular areas, light pollution is evident in many towns and cities in Ireland. Light pollution can be classified into three distinct types:

**Sky glow** which is the orange glow in the night sky over many towns and cities. In many instances this type of pollution is caused by street lighting.

**Light glare** is a type of light pollution that originates from a powerful light source such as floodlights and prevents a person from seeing the illuminated area properly.

**Light spill** occurs when one light source is lighting another non-intended area.

To ensure a reduction in light pollution, Cork City Council will follow best practice in minimising light pollution. Lighting will be specified according to environmental zones as follows:

- |                |   |
|----------------|---|
| <b>Zone E0</b> | - Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places  |
| <b>Zone E1</b> | - Areas of Outstanding Natural Beauty, Conservation Areas, Sites of special Scientific Interest, Environmentally Sensitive Areas, Special Areas of Conservation and Urban Conservation Areas. |
| <b>Zone E2</b> | - Areas of low district brightness (rural locations outside Zone E1) corresponding to high sensitivity on map.  |
| <b>Zone E3</b> | - Areas of medium brightness (urban locations) corresponding to medium sensitivity on map.  |
| <b>Zone E4</b> | - Areas of high district brightness (urban centres with high night –time usage) corresponding to low sensitivity on map.  |

## 1.6 Public Lighting Life cycle asset management

### 1.6.1 New Infrastructure

Cork City Council shall endeavour to apply the appropriate standards to the design and construction of new infrastructure. These standards will support future maintenance operations, ensure that the expected life of any new construction is achieved and that all aspects concerning safety are properly considered

These standards should be used for:

- Planned, reactive and structural maintenance works
- All new improvement schemes
- All externally funded works on, or effecting, the network
- All new developments which are awarded planning by Cork City Council

### 1.6.2 Public Lighting Energy management

#### Energy & Climate Change

Energy is procured on an unmetered/metered basis for all street lighting. Energy is paid for monthly and is measured by use of a UMR.

In accordance with the County Council's corporate policies on Carbon Reduction the purchase of unmetered energy seeks to obtain up to 100% green energy which has benefits

to the environment in reducing greenhouse emissions and other pollutants. Cork City Council is committed to reducing CO2 emissions, and as part of Cork City Council's obligation to improve energy efficiency by 50% before 2030, major energy saving opportunities exist through replacing existing luminaires with LED lanterns coupled with improved control of current lighting stock.

The Transportation Division are committed to the implementation of the principles of ISO55001 Asset management standard.

## **2 Safety and Health**

The developer shall comply with all the duties laid down in the Safety, Health and Welfare at Work (General Applications) Regulations 2007 and the Safety, Health and Welfare at Work (Construction) Regulations 2013 and the ESB National code of Practice and the ESB code of practice for avoiding danger from overhead lines and the ESB

Any person who carries out specific works on the public lighting network in proximity to ESB networks shall be authorised to do so by the **ESB ONLY** as per the ESB Requirements for Work on Public Lighting on ESBs Network (latest Edition)

Any person who carries out specific works on public lighting network within proximity to ESB networks must be a qualified Electrician, Completed the required ESB training and audited by the Local Authority's Authorisation Officer.

Following a successful Live Works Audit by the Local Authority a public lighting safety approval certificate shall be issued to the contractor employee confirming that they are competent to carry out such works.

Public Lighting Safety Approvals must be authorised by a Responsible Manager in the Local Authority for which the person being authorised is working at the time of approval.

Account shall be taken of any traffic management measures that may be required during the installation of public lighting schemes including compliance with Chapter 8 of the Traffic Signals Manual published by the Department of Transport. This includes the requirement that a traffic management plan be designed by a holder of a current valid Traffic Management Designer CSCS card and implemented on site by a current valid CSCS Signing, Lighting and Guarding on roads license holder.

### 3 Client and Designer Duties

Developers and/or their agents shall ensure they comply with their statutory duties defined in the Safety, Health and Welfare at Work (Construction) Regulations 2013, particularly those duties detailed in Part 2, Section 7 (2) and (5).

Designers submitting lighting designs shall ensure they comply with their statutory duties defined in the Safety, Health and Welfare at Work (Construction) Regulations 2013, particularly those duties detailed in Part 2, Section.

The Safety, Health and Welfare at Work (Construction) Regulations 2013 clearly states that the client (developer) must appoint a 'competent designer' to undertake all design work. This statutory duty applies to lighting and associated electrical infrastructure design. The appointed competent designer must comply with their statutory duties which are clearly defined in S.I. 291.

Designers must prepare, record and store written documentation clearly showing how design decisions are arrived at. Under S.I. 291 the designer must share (if requested) such records with others that have an interest in the project. Cork City Council clearly has an interest in all designs carried out for installation in its locale and may request such records from designers.

Cork City Council reserve the right to have lighting designers demonstrate their competence to undertake lighting and associated electrical infrastructure designs.

Developers and their agents should be aware that 'designs' offered on an 'advisory basis or on a *pro bono* basis still have to comply with the statutory duties defined in the Safety, Health and Welfare at Work (Construction) Regulations 2013.

## 4 Lighting Engineering Consultants

The Public Lighting Office require that Engineering Consultants to be competent in undertaking lighting design and electrical supply design for street lighting, sports lighting and or floodlighting schemes etc. in accordance with the BS/CEN code of practice, national rules for electrical installation “NSAI regulations” and Cork City Council requirements.

The Developer can contact the Public Lighting Office of Cork City Council for information regarding standards or equipment to be used in their proposed designs.

Consultants shall consider the life cycle costs from design, maintenance and removal for a project and be cognisant of the circular economy approach.

### 4.1 Circular Economy

In a world of increasing energy demands and rapidly declining natural resources, the transition from a linear economy to a circular economy is essential to ensure sustainability. A circular economy is a systemic approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take-make-waste' linear model, a circular economy is regenerative by design and aims to gradually decouple growth from the consumption of finite

Circular Lighting means that lighting products are designed in a fully sustainable way. At end of the life of a product, the luminaire can be upgraded and reused, or all materials and parts can be returned for repurposing or recycling. By minimizing materials waste and reducing environmental impact, it helps create an ecosystem that extends the life of lighting products and provides a better future for the next generation.

Lighting designer and consultants shall use this approach when formulating lighting design for external and public lighting schemes for Cork City Council. Cork City may reject proposed light fittings if they do not meet this requirement.

### 4.2 WEEE Directive

Based on Extended Producer Responsibility (EPR) principles, the EU Directive on waste electrical and electronic equipment (WEEE) makes producers responsible for the organisation and/or financing of the collection, treatment, recycling and recovery of their products at end of life. The purpose of the directive is to contribute to sustainable production and consumption by, as a first priority, the prevention of WEEE and, in addition, by the re-use, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste and to contribute to the efficient use of resources and the retrieval of valuable secondary raw materials.

This EEE waste contains a complex mixture of materials, some of which are hazardous. These can cause major environmental and health problems if the discarded devices are not managed properly. In addition, modern electronics contain rare and expensive resources, which can be recycled and re-used if the waste is effectively managed.

Improving the collection, treatment and recycling of electrical and electronic equipment



(EEE) at the end of their life can

- improve sustainable production and consumption
- increase resource efficiency
- contribute to the circular economy

## 5 Terminology & Definitions

Cork City Council Public Lighting Office	- Owner, Operator and Governing Authority of the public lighting network within Cork City boundary.
ESB Networks Limited	- The Distribution System Operator of the LV electrical network.
Institute of Lighting Professionals (ILP)	- The ILP is the UK and Ireland's professional lighting association, dedicated solely to excellence in lighting.
Professional Lighting Guide (PLG)	- Guidance notes developed by the ILP in relation to lighting best practice.
NSAI	- National Standards Authority of Ireland – a body responsible for Developing Standards with registered offices at Government Office, Swift Square, 1 Northwood Park, Santry, Dublin 9.
PL	- Public Lighting
PL System	- Consists of all Lanterns, Poles, Columns, Brackets, Photocells, PL Control Equipment, PL customer service pillars, switch-wires and conductors installed for the sole purpose of supplying public lighting and owned by each Local Authority.
Competent Person	- A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached  A competent person is expected to be able to provide a reasonable interpretation of and advise on the best means by which the recommendations of this British Standard may be implemented.
Lighting Designer	- Person who is suitably experienced and competent to undertake lighting design for public spaces.
National Road	- This is a public road or a proposed public road which is classified or is intended to be classified as a national road under Section 10 of the Road Act (1993);
Regional Road	- This is a public road or a proposed public road which is classified or is intended to be classified as a regional road under Section 10 of the Road Act (1993).
Local Road	- This is a public road or a proposed public road other than a national road or a regional road.
Conflict Area	- Junctions, Interchanges, roundabouts and pedestrian crossings, where streams of motorised traffic intersect with each other or with other road users such as pedestrians and cyclists from different approaches. The extent of a Conflict Area will be determined on a project specific basis and by following the guidance in this Standard.

Light Emitting Diodes (LED)	- Light Emitting Diode. A semi-conductor light source typically providing good energy efficiency and useful life. LEDs are usually installed on a printed circuit board (PCB or board) and require an LED driver to operate.
LED Driver	- Electrical transformer to convert mains power into a suitable electrical supply for the LEDs in the luminaire.
M Lighting Class	- The M classes are intended for drivers of motorized vehicles on traffic routes of medium to high driving speeds.
P Lighting Class	- The P classes are intended for pedestrians and pedal cyclists on footways, cycleways, emergency lanes and other road areas lying separately or along the carriageway of a traffic route, and for residential roads, pedestrian streets, parking places, schoolyards, etc.
C Lighting Class	- The C classes are intended for drivers of motorized vehicles, and other road users, on conflict areas such as shopping streets, road intersections of some complexity, roundabouts, queuing areas, etc.
average illuminance ( $\bar{E}$ )	- Horizontal illuminance averaged over a calculated area
minimum illuminance ( $E_{min}$ )	- Lowest illuminance on a calculated area
overall uniformity ( $U_o$ )	- Ratio of the lowest to the average value
Luminaire Efficacy (lm/watt)	- A measure of the efficiency of the light in terms of output per energy consumption.
Constant Light Output	- Functionality to constantly adjust the luminous flux of the light source based on the known or predicted depreciation behavior of the light source to enable a constant luminous flux over time.
Colour Rendering	- expressed as a rating from 0 to 100 on the Color Rendering Index (CRI), describes how a light source makes the color of an object appear to human eyes The colour rendering attributes of the light source should be appropriate to the task it is being used for.
Maintenance Factor	- The maintenance factor is a factor used in lighting calculations to account for the depreciation in light output over time. This factor is a positive number greater than 0 and less than 1.
Central Management Systems (CMS)	- A specially developed software and service package that can efficiently handle all tasks of data collection and facility management. It provides a platform for the continuous analysis of the operational safety of the

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	system condition and of the energy flow.
Dimming	- Dimming is the process of reducing the current and consequently the lighting intensity during periods where there is little vehicle or pedestrian movement.
Mounting Height	- Nominal vertical distance between the photometric centre of a road lighting luminaire and the surface of the road.
Mounting Offset	- The horizontal distance between the centreline of the lighting column and the centre of area of the equipment being attached to the lighting column.
Circuit Fuse	- This is an electrical safety device that operates to provide overcurrent protection of an electrical circuit.
Miniature Circuit Breaker	- An automatically operated electrical switch designed to protect an electrical circuit from damage caused by excess current from an overload or short circuit.
Residual Current Device	- A device that quickly breaks an electrical circuit to prevent serious harm from an ongoing electric shock
RCBO	- A circuit protection device which is a combination of a miniature circuit breaker and residual current devices
Lantern Fuse	A controlling fuse located in either the column base or in a pole mounted interface unit in the case of overhead ESB networks poles.
Lighting Column	- A structure of typical height between 3m and 20m primarily designed to support a luminaire but which may be used to carry other attachments or equipment. Lighting columns are manufactured from a variety of materials and in a range of cross-sectional shapes. They are primarily steel or aluminium stepped tubular columns, steel or aluminium tapered tubular columns, or steel octagonal columns.
Bracket	- An extension piece to the lighting column consisting of a bracket upstand and a bracket projection used to mount the luminaire in the required position relative to the column shaft. Brackets may be single arm, double arm or have multiple arms, and the arms may be straight or curved.
Spigot	- Luminaire spigot is the connection tube on the bracket or lighting column for mounting the luminaire. A bracket spigot is provided on the lighting column for mounting a bracket.
Wind Area	- The silhouette area of the equipment including any brackets, shields, enclosures or other accessories that will be installed.

- Interface Control Unit - A piece of electrical apparatus erected on ESB Network poles to segregate ESB Networks and the Local Authority's electrical systems. This unit will give a point of isolation from the ESB's Network. It shall contain an ESB Networks main fuse unit, Local Authorities enclosure, switchgear and associated wiring. The PL-ESB interface units are owned by the Local Authority.
- Luminaire - Complete (electric) lighting unit and all its related support and (non-network) supply equipment i.e. pole, bracket, lamp holder, ballast, reflector, control gear etc. as well as the actual bulb/lamp
- ESB Mini Pillar - A ground mounted electrical distribution pillar owned by ESB
- PL Customer Service Pillar - A ground mounted electrical distribution pillar owned by a local authority and containing PL Control equipment, isolator, and an ESB Networks main fuse unit. The PL Customer Service Pillar has previously been referred to as a micro pillar.
- Luminaire Supply Cable - The electrical cable between the fused cutout and the luminaire that passes internally up the lighting column shaft and along the bracket, when present.
- MPRN - Metering Point Reference Number (MPRN) is the unique 11 digit number assigned to an electricity connection and meter.
- TMPRN - Technical Metering Point Reference Number: a collection of luminaires, usually in a common location e.g. one street or avenue provided the pattern of usage is identical. (Dimming etc.)

## 6 Electrical Standards

Standard Reference	Standard Name
EN 13201-1:2014	Road lighting, Guidelines on selection of lighting classes
EN 13201-2:2015	Road lighting, Performance requirements
EN 13201-3:2015	Road lighting, Calculation of performance
EN 13201-4:2015	Road lighting, Methods of measuring lighting performance
EN 13201-5:2015	Road lighting, Energy performance indicators
BS 5489-1:2020	Design of road lighting. Lighting of roads and public amenity areas. Code of practice
BS 5489-2:2016	Code of practice for the design of road lighting. Lighting of tunnels
BS 5489-3:1992	Road lighting, Code of practice for lighting for subsidiary roads and associated pedestrian areas
BS 5489-4:1992	Road lighting, Code of practice for lighting for single-level road junctions including roundabouts
BS 5489-5:1992	Road lighting, Code of practice for lighting for grade-separated junctions
BS 5489-6:1992	Road lighting, Code of practice for lighting for bridges and elevated roads
BS 5489-7:1992	Road lighting, Code of practice for the lighting of tunnels and underpasses
BS 5489-8:1998	Road lighting, Code of practice for lighting that may affect the safe use of aerodromes, railways, harbours and navigable inland waterways
BS 5489-9:1996	Road lighting, Code of practice for lighting for urban centres and public amenity areas
BS 5489-10:1992	Road lighting. Code of practice for lighting for motorways
DOC-030303-AEN:2009	ESB National Code of Practice for Customer Interface 4 <sup>th</sup> Edition
ESB Code of Practice for avoiding danger from overhead electricity lines 2 <sup>nd</sup> Edition - 2009	
DOC-140109-AVM:2006	ESB Networks Electrical Safety Rules
DOC-050516-CFR:2020	ESB Requirements for Work on Public Lighting on ESB's Networks
DOC-181119-FFW:2020	Minimum Standards for Public Lighting Work Activities - 2020
DOC-020513-BOD:2014	Procedure, LV Single Phase Commissioning - Reference Guide

DTIS 050500AZF:2014	Housing Scheme: Guidebook for ESB Networks standards for electrical services 5 <sup>th</sup> Edition
DOC-090414-BSL:2019	Company Standard - Testing and Electrical Properties of MEWP's used on or near the LIVE LV System
IS10101:2020	National Rules for Electrical Installations
ET205:1998	Guide to the installation of extra-low voltage lighting systems
ET208:2000	Code of practice for the design, selection and erection of LV switchboards for residential applications
ET211:2003	Code of practice for public lighting installations in residential areas
PLG-01:2017	Central Management Systems
BS EN IEC 60598-1:2021	Luminaires. General requirements and tests
BS EN 60598-2-2:2012	Luminaires. Particular requirements. Recessed luminaires
BS EN 60598-2-3:2003 +A1:2011	Luminaires. Particular requirements. Luminaires for road and street lighting
BS EN 60598-2-5:2015	Luminaires. Particular requirements. Floodlights
BS EN 60598-2-6:1995, IEC 60598-2-6:1994	Luminaires. Particular requirements. Luminaires with built-in transformers for filament lamps
BS EN 60598-2-13:2006 +A2:2016	Luminaires. Particular requirements. Ground recessed luminaires
BS EN 60598-2-24:2013	Luminaires. Particular requirements. Luminaires with limited surface temperatures
PLG-02:2013	The applications of conflict areas on the highway
PLG-03:2012	Lighting for subsidiary roads
PLG-04:2013	Guidance on undertaking environmental lighting impact assessment
PLG-05:2013	The brightness of illuminated advertisements
PLG-06:2014	Guidance on the installation and maintenance of seasonal decorations and lighting column attachments
PLG-07:2013	High mast for lighting and CCTV
PLG-08:2016	Guidance on lighting of adaptive lighting within the public realm
PLG-09:2020	Ensuring visibility within short tunnels
PLG-23:2020	Lighting for cycling infrastructure
GN1:2020	Guidance Note 1 for the reduction of obtrusive light
GN3:2016	Guidance Note 3 measurement of performance of LEDs

GN5:2017	Guidance Note 5 Using LEDs
GN6:2017	Guidance Note 6 Retrofitting LED luminaires on existing lighting columns
GN8:2018	Guidance Note 8 Bats and artificial lighting
GN9:2019	Guidance Note 9 Domestic exterior lighting: getting it right
GN11:2020	Guidance Note 11 Determination of Maintenance Factors
GN22:2019	Asset Management Toolkit: Minor Structures
TR12:2007	Technical Report Lighting of pedestrian crossings
DN-LHT-03038:2018	Design of Road Lighting for National Roads
DN-LHT-03078:2000	Design of Road Lighting for All-Purpose Trunk Roads
IS EN 40-1:1992	Lighting columns - Part 1: Definitions and terms
IS EN 40-2:2004	Lighting columns - Part 2: General requirements and dimensions
IS EN 40-3-1:2000	Lighting columns - Part 3-1: Design and verification - Specification for characteristic loads
IS EN 40-3-2:2013	Lighting columns - Part 3-2: Design and verification - Verification by testing
IS EN 40-3-3:2013	Lighting columns - Part 3-3: Design and verification - Verification by calculation
IS EN 40-4:2005	Lighting columns - Part 4: Requirements for reinforced and prestressed concrete lighting columns
IS EN 40-5:2002	Lighting columns - Part 5: Requirements for steel lighting columns
IS EN 40-6:2002	Lighting columns - Part 6: Requirements for aluminium lighting columns
IS EN 40-7:2002	Lighting columns - Part 7: Requirements for fibre reinforced polymer composite lighting columns
PD 6547:2004+A1:2009	Guidance on the use of BS EN 40-3-1 and BS EN 40-3-3
BS EN ISO 1461:2009	Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods
BS EN 1991-1-4:2005 +A1:2010	Eurocode 1. Actions on structures. General actions. Wind actions
HSA Document	Code of Practice for Avoiding Danger from Underground Services - 2010
HSA Document	MEWPs, Guidance on Safe Operating Procedures - 2017
HSA Document	Safety, Health and Welfare Act 2005
HSA Document	Safety, Health and Welfare at Work (General Application)



	Regulations
HSA Document	Safety, Health and Welfare at Work (Construction) Regulations
Department of Transport, Tourism and Sport	Guidelines for Managing Openings in Public Roads – 2 <sup>nd</sup> Edition - 2017
Department of Transport, Tourism and Sport	Design manual for Urban Roads and Streets - 2013
Department of Transport, Tourism and Sport	Traffic Management Guidelines - 2019
BS EN 60529:1992 +A2:2013	Degrees of protection provided by enclosures (IP Code)

\* **Note:** Where contradictions or ambiguities arise between the standards, the standard listed higher in the order of precedence shall govern.

## 6.1 LED Standards

As well as complying with the current requirements of IS EN 60598-2-3, EN 13201 and BS 5489, the luminaires and components shall also comply with the requirements of the current edition of the following standards or equivalent where relevant:

Standard	Title
EN 62504:2014 +A1:2018	General lighting - Light emitting diode (LED) products and related equipment - Terms and definitions
<b>Product electrical safety standards</b>	
BS EN IEC 60598-1:2021	Luminaires - Part 1: General requirements and tests
BS EN IEC 60598-2-3:2003 +A1:2011	Luminaires – Part 2-3: Particular requirements for road and street lighting
BS EN IEC 60838-2-2:2006 +A1:2012	Miscellaneous lampholders. Part 2-2: Particular requirements. Connectors for LED modules
BS EN IEC 62031:2020	LED modules for general lighting. Safety specification.
EN 61347-2-13: 2014 +A1:2017	Lamp controlgear – Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
<b>Photobiological safety standards</b>	
EN 62471:2008	Photobiological safety of lamps and lamp systems
<b>Product performance standards</b>	
BS EN 62384:2006	DC or AC supplied electronic control gear for LED

+A1:2009	modules. Performance requirements
BS EN IEC 62386-101:2014 +A1:2018	Digital Addressable Lighting Interface – Part 101: General requirements - System Components
BS EN IEC 62386-102:2014 +A1:2018	Digital Addressable Lighting Interface Part 102: General requirements - Control gear
BS EN IEC 62386-207:2018	Digital Addressable Lighting Interface Part 207: Particular requirements for control gear. LED modules (device type 6)
BS EN 62707-1:2014	LED. Binning. Part 1: General requirements and white colour grid
BS EN 62717:2017 +A2:2019	LED modules for general lighting. Performance requirements
BS EN 62722-2-1:2016	Luminaire performance – Part 2-1: Particular requirements for LED luminaires
BS EN 61643-11:2012 +A11:2018	Low-Voltage Surge Protective Devices - Part 11: Surge protective devices connected to low-voltage power systems - requirements and test methods
<b>Electromagnetic compatibility</b>	
BS EN IEC 55015:2019	Limits and method of measurement of radio disturbance characteristics of electrical lighting and similar equipment
BS EN 61547:2009 COR 2015	Equipment for general lighting purposes. EMC immunity requirements

\* **Note:** Where contradictions or ambiguities arise between the standards, the standard listed higher in the order of precedence shall govern.

## 7 General Technical Specification, Luminaries and LEDs

### 7.1 General Requirements

Cork City Council aims to keep the number of diverse luminaire models within reasonable limits in its inventory. This is to allow economies of scale to be achieved in the maintenance (replacement, spares etc.) of its exterior lighting assets. Cork City Council has put together a non-exhaustive list of Suppliers and Luminaires that have been previously installed on the Public Lighting Network in [Appendix 4](#). Cork City Council already has significant numbers of the specified good quality luminaires in its inventory. Use of other luminaires (including others supplied by listed suppliers), whilst not prohibited, requires the explicit approval of Cork City Council public lighting office engineer. Lighting designers, Consultants and Developers will be required to fill out [Appendix 4.1](#) at the rear of the document outline the technical details of the proposed alternate luminaires. This will be required to be submitted with the lighting design for review and approval by Cork City Council Public Lighting Office.

All exterior lighting scheme shall incorporate LED sources approved by Cork City Council.

Cork City Council does **NOT** accept SON or other HID light sources for replacements or new installs in exterior lighting Schemes.

### 7.2 Equipment Environmental Working Conditions

All equipment specified must be suitable for outdoor use. They will be installed outdoors in Ireland in locations less than 1,000 meters above sea level.

The following air temperatures apply:

- Maximum ambient temperature 30°C
- Maximum daily average ambient temperature 40°C
- Annual average ambient temperature 20°C
- Minimum ambient temperature -15°C

Equipment will be exposed to:

- Salt Laden Atmosphere
- Windblown salt deposits occur throughout the year
- Wind Driven Rain Rainfall average 1000mm per annum
- Rainfall Frequency Once every two days on average
- Atmospheric Pollution Heavy
- Solar Radiation 420 – 870 W/m<sup>2</sup>
- UV Light Exposure Daily
- High Humidity up to 95%
- Maximum wind (gust) velocity 50m/s

- The humid salty atmosphere in Ireland is particularly severe on non-galvanised ferrous parts and on aluminium and its alloys.

## 7.3 LED Public Lighting Luminaires

### 7.3.1 LED Luminaire Specifications

The LED luminaires shall be CE marked and the CE marking shall be awarded by an EU based certifying body. They shall be manufactured in accordance with the European Directive on Waste Electrical and Electronic Equipment.

Luminaires shall comply with I.S. EN 60598-2-3.

The LED luminaire shall be purpose built for LED light sources and not a retro-fit product. LED Luminaires originally designed for non-LED sources **will not** be accepted.

The LED luminaire shall be designed and constructed to operate in Irish climatic conditions in an ambient temperature of -15°C to +30°C for a minimum period of 20 years.

The LED luminaires are required for operation on an Electricity Supply Board (ESB) Networks supply which is declared at 230 Volts, ±10% i.e. from 207 Volts to 253 Volts, at 50 Hertz. The power factor shall be a minimum of 0.92.

The LED luminaires shall be fitted with **surge protection** as per EN 61643-11:2012 +A11:2018 and be rated 10kA/10kV. The surge protection shall be the first component encountered in the circuit to ensure protection for all components within the luminaire.

The complete LED luminaire shall be rated IP65 as a minimum standard.

The LED luminaire shall have an impact resistance rating to IK08 as a minimum on the complete luminaire, including on the luminaire body and on the LED module protectors.

The luminaire shall be of the **Constant Light Output (CLO)** type.

The LED luminaire body shall be manufactured from die-cast aluminium, **preferably LM6 alloy**. The LED luminaires shall be finished in a painted finish, unless otherwise advised by Cork City Council. Thermoplastic or Thermoset Powder coating over the luminaire is acceptable. Luminaires housing should be **GREY** in colour, typically 9007.

All grub screws, hinges, toggle catches, captive screws and nuts shall be made of non-corrosive metal material.

LED lanterns should have the ability to tilt -5 to +10 degrees, but generally be mounted a 0 degree on a column.

The spigot entry shall be die-cast aluminium alloy suitable for accepting the following spigot sizes:

- Side entry – 32mm x 76mm long to 42mm x 100mm long
- Post-top entry – 60mm x 115mm long to 76mm x 115mm long

The use of reducers for the spigot entry size (i.e. to change the size from 42mm down to

32mm, from 60mm down to 42mm or from 76mm down to 60mm) or to alter the available angles of tilt are permitted.

It is preferable that a single spigot entry adaptor is provided with each luminaire that is capable of being used for mounting the luminaire in both side-entry and post-top entry configurations.

The light output ratio of the LED luminaire shall be greater than 90% with an Upward Light Output Ratio of no more than 0%.

LED Luminaires should have a maximum windage of 0.07m<sup>2</sup>

The LED luminaire shall have an Installed Luminous Intensity Class for the restriction of Disability Glare of at least G1.

If not utilising an LED lantern from the list of typical supplier in [Appendix 4](#), details on the thermal management design of the LED luminaire and how the luminaire transfers heat away from the LEDs shall be provided to Cork City Council.

**Note:** Active cooling systems utilising fans are not permitted.

The LED luminaire details, such as product order code, wattage, optic setting, additional requirements etc., shall be identified by means of a labelling system affixed inside of the luminaire body.

LED lanterns shall incorporate a 7-pin NEMA socket and approved photocell or approved miniature photocell.

Any LED luminaire shall utilise 5 core cable as standard from the lantern to the fuse unit in the column.

### 7.3.2 LED Modules

The LED modules shall be manufactured by Nichia, Cree, Philips Lumileds or an approved equivalent agreed with Cork City Council.

As standard, the LED modules shall be as per [8.4.3 Colour Temperature section](#) with a Colour Rendering Index (CRI) of at least 70 (Ra ≥ 70).

The minimum performance requirements of the lantern shall be L90 B10 at 100,000hrs across the full range of outputs.

The minimum lighting luminous efficacy of the complete luminaire at the proposed driver current shall be as a minimum 120lm/W (Lumens/Watt). Note: the luminous efficacy of the LED chip only will not be accepted. It must be given for the complete luminaire.

Cork City Council requires the highest possible luminous efficacy for each luminaire.

### 7.3.3 LED Driver

The LED Driver must provide a well-controlled DC source over a range of currents, such as Philips Xitanium LED Driver or approved equivalent.

The LED Driver shall be of the Constant Light Output (CLO) type.

The standard CLO value shall be 90% of the initial lumen output. Additional CLO values may be requested by or considered by Cork City Council at initial design or review stage.

The LED Driver shall be programmable and allow for dimming of the luminaire. It shall also have Dual Direction Communication in DALI protocols to allow for future remote monitoring of the installation.

The LED Driver shall be pre-programmed to the dimming profiles as indicated in section [8.4.5 Dimming Profile](#)

A commonly used dimming profile is U14 which has the following characteristics

- Profile U14

Dusk to Midnight - 100% of CLO output

Midnight to 6am - 75% of CLO output

6am to Dawn - 100% of CLO output

Should Cork City Council require a different dimming profile to the above dimming profile, we will advise on the requirements for the dimming profile at initial design or review stage.

The LED Driver shall be enabled for use with an Open Protocol Central Management System (CMS) with the data cable pre-wired.

The driver current shall be a maximum of 1050mA.

Preference will be given to luminaires that offer a long, reliable service life and low power consumption. This is more likely to be achieved by **NOT** driving the luminaires close to their rated maximum currents.

A power factor of 0.92 minimum is required.

### **7.3.4 Testing & Certification**

All testing of the luminaire, LED modules and LED Driver must have been carried out by an independently accredited test laboratory, preferably located within the European Union.

The CE marking must be awarded by an EU based certifying body.

The Certificate of Compliance of CE testing and marking of the complete luminaire (including LED modules and LED Driver) shall be provided to Cork City Council if requested. A Declaration of Performance for the luminaire, in addition to CE marking, shall also be provided.

The following reports must be submitted to Cork City Council if requested:

- IES LM-79-08 test report for the luminaire.
- IES TM-21-11 report for the luminaire with LM-80 chip data and in situ temperature measurement test data and should clearly indicate the lumen maintenance after the test time expressed as a percentage of the initial lumen output, and the calculated and reported L80 values (in hours).

- IES LM-80-08 test report for the LED chip to validate the data entered into the TM-21 report.
- All Thermal Tests carried out on the luminaire and LED modules, including LED junction temperature testing and In-Situ Temperature Measurement Test (ISTMT) Report to validate ISTMT data entered into the TM-21 report

### 7.3.5 Lifetime

Life is the length of time during which a LED light source, LED module, or LED luminaire provides more than the claimed percentage of the initial luminous flux, under standard conditions. A LED product has thus reached the end of its life when it no longer provides the claimed percentage of the initial luminous flux,  $I_x$ .

Lifetime is a combination of claimed lumen maintenance and failure fraction  $F_y$ , at the time of reaching the claimed percentage of the initial luminous flux  $L_x$ .

Life testing of the LED light source is carried out according to LM-80 up to 6,000 hours. Beyond these values statistical predictions are made.

Lumen depreciation rate is determined by the light output at 25% of rated life (or a maximum duration of 6000 hours) compared to the initial input.

The classifications are:

- Code 1: Light Output > 90% of initial
- Code 2: Light Output > 80% of initial
- Code 3: Light Output > 70% of initial

LM-80 data shall be provided demonstrating a lumen maintenance of 99% or greater at 55°C @ 6,000 hours

## 7.4 Controls

It is a requirement to incorporate a factory set dimming regime on the electronic control gear. The standard regime is ESNB UMR Dimming Profile U14, dim to 75% of output (dim by 25%) from 12am – 6am. Cork City Council, Public Lighting Office, can advise further at design stage. Dimming Profile U14 was the old 2A dimming profile

All photocells should have a **35/18lux ratio switching** utilizing a green colour base to visually identify the switching regime.

Decorative or period style lanterns can incorporate a Westire 8482 miniature photocell or similar approved. This will be approved by Cork City Council. A green lock nut will be utilized in the case of a miniature photocell.

All other photocells shall be mounted utilizing a 7 pin Nema socket with cork washers utilizing Westire Ireland 8480 photocell or approved similar with a green colour base section.



## 7.5 Central Management System

All luminaires should be capable of communicating with a **Central Management System (CMS)** via single management open platform software interface that commands, controls, monitors and configures networks of smart public lighting (PL), as well as other devices connected to the PL network, through any protocol or control technology, including power-line (such as SLV iLON) or wireless based technology (such as Harvard LeafNut compatible). The following must be noted:

- Compliant with TALQ standard and interoperable with TALQ compliant field devices
- Secure two-way communication with GPS location
- Capable of real-time control (on/off, dimming - levels), scheduled programmed control (time based profiles) and also event based scheduled control
- Dynamic (adaptive) sensor based lighting control
- Nominal sunrise and sunset times (astronomical clock) and ambient light (photocell)
- Parameters: lamp status (on/off), lamp power, lamp voltage, mains supply voltage, lamp cumulative run hours, consumption (from installation), faulty lamp, weak lamp, ballast status (voltage/current/temperature/run-time), high lamp voltage, brown outs, power cycle, high run hours
- Built in Energy Meter measuring (per lighting point, cumulative): KWh, IRMS, VRMS, PF, instantaneous power, average power
- Automatic alarming (warnings, errors) and notification (failure) system (via SMS/e-mail alerts)
- Built-in redundancy (comms network failure) with lantern reverting to autonomous control
- Compatible and interoperable (synchronized asset information) with PL inventory asset management database tools (such as DeadSure)
- Capable (comms) of delivering PL firmware upgrades.

## 7.6 Compatibility of Components

There is a significant issue of compatibility in choosing appropriate replacement components or assemblies. Generic substitutes may not have the same visual appearance or give the same lighting performance as the original equipment.

Replacement control gear must be capable of operating the lamp no less efficiently than the original control gear. New or revised circuit wattages must be recorded in the Cork City Council Deadsure Inventory Database.

Lighting column replacement has to be considered on an individual basis as movement to a different location may affect light distribution and potentially reduce performance.



Care should also be taken when replacing luminaires fixed to bracket arms with post-mounted luminaires to ensure that optical performance is maintained.

Mechanical performance will also be affected by changes in mounting height, bracket out-reach, spigot angle and through the incorrect alignment of bracket and luminaire relative to the lit area.

Due to the impact of the lighting on sky-glow, luminaires should be specified with flat glass.

Many high-speed roads are often subject to restrictions on the times that access can be made available for maintenance activities and therefore every effort must be made to ensure that lights not working are repaired and put back into full operation in the shortest time on-site. This often leads to luminaires being replaced rather than repaired on-site. However, this is not an excuse to use the incorrect fitting type, make or model of luminaire. Maintenance activities on restricted access roads must be planned in advance and this should allow the purchase of the correct luminaires to replace those that need replacement. Care should be taken when ordering replacement luminaires to ensure that the correct type is specified to match those in situ on the road.

In this way the aesthetics and the performance of the lighting system will be maintained.

Good records and knowledge of the lighting system will provide good guidance as to the quantity of units needed for maintenance purposes.

## 8 Public Lighting Design Criteria

### 8.1 Competency for Designers & Quality Assurance

The design of lighting is a specialist activity and shall be undertaken by competent and experienced person(s) who can demonstrate an appropriate understanding of road lighting design principles.

Electrical design applicable to road lighting systems shall only be undertaken by someone with appropriate formal training in electrical design and who can demonstrate that they are understanding of the relevant lighting standards.

### 8.2 Design File

A Lighting Design File shall be prepared at concept stage and this shall be developed during the preliminary and detailed design phases.

The Lighting Design File shall include a design methodology that sets out in clear detail the decisions taken during the design life cycle. This is particularly important when design organisations change as the phases of the design change and helps in ensuring a 'lean process' that will minimise revisiting aspects of the design that have already been considered and eliminated.

As part of the design package from the Lighting Designer / Developer the following information shall be submitted for review by a Cork City Council Public Lighting Engineer. If **ALL** information is not submitted, Cork City Council reserves the right to reject the design until the correct information has been submitted. The following information shall be formatted as listed below:

- Lighting Reality® report showing the lighting modelling calculations (PDF format). The cover page shall show:
  - The Name of the Project
  - The identity of the lighting designer
  - The lighting classifications the project is designed to
  - The combined maintenance factor for the luminaire and how it was derived.
  - Dimming Profile used for the design
  - Circuit wattage of each of the lantern types selected
- AutoCAD drawing in soft format showing the following information:
  - The site boundary
    - All private areas to be identified
  - ESB supply cabinet locations (Mini Pillars)
  - Customer Service Pillars location (Micro Pillars), individually numbered for identification

- PL access chambers, dimension included (Length x Width)
- PL ducts, quantity and diameter of all
- Individually numbered PL columns
  - PL Columns to be numbered in a logical order
  - PL Column identification to include
    - Lantern Type
    - Column Type
    - Column Height
    - Bracket Information (if required)
- All landscaping details ensuring min distances of PL columns to trees etc.
- Voltage drop calculations for each circuit.
  - Single line circuit diagram for each customer service pillar from ESB source point and the associated sub-circuits within
- Luminaire Schedule with lantern and lighting column details for the proposed design including the
  - Number of LEDs within the lantern
  - Circuit wattage and driver current
  - Lighting column type & heights
  - Lantern & Column Manufacturers
- Consultant / Developer shall submit written details outlining the Original Equipment Manufacturer's warranty and the procedure for transferring warranty to Cork City Council once a project is taken in charge by Cork City Council.

### 8.3 Design Standards

Lighting designers shall refer to the following Regulations, Standards and Guidance

Documents as a basis for their design calculations along with any other relevant standard deemed necessary to submit a compliant public lighting designed scheme:

- NSAI National Rules for Electrical Installations IS 10101: 2020 5<sup>th</sup> Edition.
- IS EN 13201-2:2015 Road Lighting
- BS 5489-1:2020 Code of Practice for the Design of Road Lighting.
- ESB National Code of Practice for Customer Interface
- Housing Schemes: Guidebook for ESB Networks Standards for Electrical Services
- S.I No. 291 of 2013: Safety, Health and Welfare at Work (Construction) Regulations

2013.

## 8.4 Lighting Design

### 8.4.1 General

Cork City Council wishes to promote the installation of energy efficient exterior lighting schemes. Measures required to achieve this include the use of lanterns with efficient optics which would minimize light pollution, optimization of scheme layout, implementing factory set dimming (or CMS) , CLO and trimming, complying with best practice and taking account of the 'Campaign for Dark Skies' issues where appropriate.

Therefore, all lighting schemes shall incorporate the requirements of "Guidance notes for the Reduction of Light Pollution" issued by the Institution of Lighting Professionals and available as a download from its website Professionals [www.theilp.org.uk](http://www.theilp.org.uk).

The main desire of a public lighting design is to achieve uniform light spread over the proposed area that is to be lit. It is also required that minimum lux levels and uniformity (as defined by the lighting class) are achieved throughout the design.

**Over lighting** in excess of the required lighting class standard **must be avoided** so as not to cause glare and distress to the persons and wildlife inhabiting or passing through the lit area. This will be evident when examining the lighting model and its associated lighting report where high intensity lighting lux levels are prolific.

Cork City Council will only accept all new designs/retrofits schemes designed by appropriate software. **Lighting Reality** is currently the preferred lighting design package of Cork City Council. It provides the appropriate report on the design, inclusive of lighting class achieved, lantern types and a lux plan for the scheme.

The rated input power and the total circuit wattage (in watts) of the complete luminaire (including LEDs and LED Driver) shall be stated on any design submitted to the Public Lighting Office of Cork City Council. The total circuit wattage shall be the Constant Light Output total circuit wattage of the complete luminaire.

All PL designs shall include proposed landscape design and the tree locations on the public lighting drawing to demonstrate that no trees are to be planted within 10m of a public lighting columns or customer service pillars.

A maintenance factor based on a cleaning cycle of 6 years shall be incorporated into the design. In the event this information is not available from the lantern manufacturer a maintenance factor of not less than 0.8 shall be applied to all exterior lighting scheme designs utilising LED sources. Cork City Council may require a different maintenance factor to be applied in areas of high pollution, vandalism etc. Lighting designer shall confirm this with the Cork City Council Engineer.

Steps should be illuminated from the bottom up to highlight the step edges, e.g. the lighting column should be erected at the bottom of the steps where possible and practicable. In some cases, it may also be necessary to erect columns along the length of the steps.

### 8.4.2 Selection of Lighting Classes

The below table is a typical list of public lighting design classes required on typical route within Cork City. This is applicable to all new or refurbish schemes. The below list is not an exhaustive one on the types of routes and their associated light class.

The below lighting classes may be altered in line with the requirements of specific project. Contractor to follow the process in BS 5489-1:2020 for the selection of lighting class

Description	Example	Preferred PL Design Class
City Centre	Cork City Centre	C2
Town/Village Centre	Riverstown	C3
Main Traffic Route $\geq 50\text{km/h}$	Lower Glanmire Road, Tivoli	P1 / M3 / C3
Main Road $\leq 50\text{km/h}$	Summerhill North	P2 / M4 / C4
Residential Spine Road	Mount Oval Spine Road	P3
Normal Residential Road, Branch Road & Cul-de-Sac	Kinvara Avenue	P4
Isolated footpaths/greenways	Blackrock / Passage West Greenway	P4 / P5

### 8.4.3 Colour Temperature

The colour temperature of LED luminaires determines whether they are classified as Cold White or Warm White. The default colour temperature for external public lighting has moved from cold white to warm white in recent times, this is in line with other European countries. The table below outlines the typical colour temperature required for public lighting luminaires on particular roads and amenity areas. This may be open to review on specific project designs.

Description	Colour Temperature
National Road network $\geq 80\text{km/h}$ , (in line with TII, this shall be restricted to a maximum of 4000K)	4000K
Regional and local Roads	3000K
City / Town / Village Centres	3000K
Residential Estates	3000K
Carparks	4000K
Buildings & Structures of Interest or Historical Value (to be reviewed on a case by case project)	3000K – 4000K

Parks, Greenway and Bat conservation area (environment impact assessment to be considered in all cases)	3000K
lights at zebra or uncontrolled crossings	4000K

Cork City Council requires that all LED modules must have a Colour Rendering Index (CRI) of at least 70 (**Ra ≥ 70**).

Colour temperature for isolated footpaths/greenways will be reviewed on a case by case basis. Colour temperature may vary with location, use of area and possible impact on flora and fauna. Consultant to engage Cork City Council on recommendations.

### 8.4.4 Dimming and Trimming

The lighting standards have evolved and support the application of variable lighting levels during the hours of darkness. This can be achieved through pre-set dimming equipment or a CMS. LED lights, by their nature, lend themselves to dimming and trimming as they reach full potential very quickly when compared to older sodium vapor lamps.

A limited range of dimming profiles has been agreed with ESB Networks, CCMA and SEAI, incorporating trimming to 35/18 which is the currently used standard. This means LED Lighting shall have a 35Lux on / 18Lux off dusk to dawn switch regime.

Dimming percentage and time of dimming is different for each dimming profile, for example U14 and U15. Each profile involves the dimming of lights between 12 midnight and 6 am to different extents, (75% and 67% respectively)

It is Cork City Council policy to incorporate factory set dimming luminaires to the dimming profiles outlined within section [8.4.5 Dimming Profiles](#) between 24.00hrs. and 06.00hrs

### 8.4.5 Dimming Profiles

Refer to [Appendix 6](#) for all available dimming profiles agreed with ESB Networks for use on the public lighting network. The table below outlines the most commonly used dimming profile by Cork City Council and describe the typical areas in which they are installed.

Lighting Class Description	Dimming Profile
<b>National Road network ≥80km/h</b> in line with TII this shall be restricted to a maximum of 4000K	Dimming Profile U13 (see below)

<p><b>Lighting Classes P3/comparable classes and higher</b> Such as city and town centres, local and rural roads and residential estates spine roads etc.</p>	<p>Dimming Profile U14 (see below)</p>
<p>The graph shows a lighting level of 35 LUX (100%) from 12 AM to 6 AM, then drops to 18 LUX (75%) until sunrise. A moon icon is shown between 12 AM and 6 AM.</p>	
<p><b>Lighting Classes P4 and lower</b> Such as residential estates branch roads off main spine road</p>	<p>Dimming Profile U15 (see below)</p>
<p>The graph shows a lighting level of 35 LUX (100%) from 12 AM to 6 AM, then drops to 18 LUX (67%) until sunrise. A moon icon is shown between 12 AM and 6 AM.</p>	
<p><b>Car Parks</b> – Profile U14/U17 - sufficient lighting levels for staff up to 12 midnight - sufficient illumination thereafter to deter criminal activity late at night.</p>	
<p><b>Park Areas, Greenways and bat conservation areas</b> - Profile U15/16 - These shall be reviewed on a scheme by scheme basis taking into consideration best practices, personal safety and any environmental impact assessments. Dynamic dimming by CMS / PIR is encouraged by CCC to all new developments</p>	

**8.4.6 Light Pollution**

Light pollution such as sky glow, glare and light trespass shall be minimised wherever possible. The ILP Guidance Notes for the Reduction of Obtrusive Light (GN01) provides further detail on the different causes of light pollution and provides examples of a good practice approach relating to the positioning of light sources, the methods and accessories to limit obtrusive light and stated values of lighting levels.

The control of lighting to minimise light pollution and the permitted lighting values are dependent upon environmental zones that are set out in GN01.

To minimise unwanted glare and light spill in the immediate surrounds of the National Road network, the luminous intensity of lighting sources at critical angles have been restricted (Glare (G) ratings) and these are set out against each type of environmental zone in the following table:



Zone	Surrounding	Lighting Environment	Example	Lumen Intensity Classes
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks	G6
E1	Natural	Intrinsically Dark	National Parks, Areas of Outstanding Natural Beauty	G5 or Higher
E2	Rural	Low District Brightness	Villages or relatively dark outer suburban locations	G4 or Higher
E3	Suburban	Medium District Brightness	Small town centres or suburban locations	G3 or Higher
E4	Urban	High District Brightness	Town/city centres with high levels of night time activity	G2 or Higher

The G2 to G6 glare rating values set out in the table are identified in IS EN 13201-2 Annex B.

All light sources in Zones E0, E1 and E2 shall use flat glass luminaires. All luminaires shall in general be positioned at 0° inclination to either minimise upward light (G2 to G3 glare classes) or ensure that no direct light above the horizontal will be emitted (G4 to G6 glare classes)

#### 8.4.7 Environmental Impact Assessment and other Planning Requirements

Where a scheme is subject to planning requirements such as an Environmental Impact Assessment under EU Directive 2014/52/EU then a Lighting Impact Assessment may be required.

Lighting Impact Assessments shall only be undertaken by competent lighting professionals. The Institute of Lighting Professionals (ILP) Professional Lighting Guide PLG-04 – Guidance on Undertaking Environmental Lighting Impact Assessments outlines a good practice approach for undertaking and assessing the impact of road lighting on surrounding land and impact on humans, flora and fauna.

#### 8.4.8 Protection of Flora and Fauna

Cork City Council values the diverse wildlife which exists throughout the urban, rural area. Much of this delicate eco structure is protected by national and international laws and as such, cannot be interfered with.

While research into the effects of light, and types of light is still ongoing, it is agreed that the strip of light evident in street lighting is in effect, a barrier to many species, regardless of the colour temperature of the light source. This includes, but is not limited to nesting areas, bat roosts, bat hunting areas, bat commuting routes, rivers, spawning grounds, and other such locals.

It is the developer's duty to ensure that any lighting installation will not interfere in any way



with protected, or endangered species or their habitats.

The developer shall liaise with Cork City Council PL Engineer to develop a suitable lighting design as outlined by planning conditions and or any environmental reports.

#### **8.4.9 Light Measurement**

When verifying the lighting levels on the streets, the process for measuring lighting performance in EN 13201 is complex and time consuming. [The ILP Technical Report 28](#) Measurement of Road Lighting Performance on site is a simplified methodology for assessing the street lighting performance on the streets. This report has been widely accepted as a robust approach for PFI contracts. The ILP report adopts a proven yet simplified process that records some 15 points on the road and verifies the design has been installed correctly or otherwise.

Designers should take every opportunity to review their designs once installed and TR28 enables an easy method to record the site measurements.

#### **8.4.10 Warranties**

The Developer is liable for replacement of any equipment which fails in normal service or otherwise needs corrective action if detected by the Council or their agents during a period of one year from the date of connection completion by ESB Networks.

Contractor shall organise as part of the taking in charge process to transfer the OEM warranties of the Public lighting Scheme into the name of Cork City Council. The council will need written proof of this before taking in charge can take place.

## 9 Electrical Supplies & Pillars

### 9.1 Electrical Supply

The availability of electricity supplies shall be confirmed by the Distribution System Operator (DSO) ESB Networks prior to design of the exterior lighting scheme.

All equipment supplied to Cork City Council is required for operation on an Electricity Supply Board (ES supply which is declared at 230 Volts, +/-10% i.e. from 207 Volts to 253 Volts, at 50 Hertz.

The type of electrical supply required shall be either an un-metered supply for schemes with an energy demand of less than 2kVA or a metered supply point in an approved Meter Supply Cabinet as appropriate for schemes with an energy demand over 2kVA with multiple load profile types. The type of electrical supply can be discussed and agreed with Cork City Council PL Engineer.

The connection from the ESB mini pillar to the Customer Supply Pillar / Meter Supply Cabinet shall be provided through a continuous length of RED coloured polyethylene ducting. Cork City Council prefer the ducting to be sized to a minimum diameter of 100mm and shall be buried at a minimum depth of 600mm. The details on Customer Service Pillar's may be found in The National Code of Practice at [www.esb.ie/esbnetworks](http://www.esb.ie/esbnetworks).

The Developer shall bear the cost of the new electrical power supply connection and shall pay for all outstanding energy bills up to the date the scheme is taken in charge by the Cork City Council (this is generally the first Monday of the calendar month).

For the avoidance of doubt, new electricity supply connections are to be applied for in the name of the Developer and not Cork City Council Public Lighting Office. ESB Networks will not make a new connection in the name of Cork City Council without the approval of the Cork City Council Public Lighting Office. Please refer to [ESB Power Connection Procedure](#) section.

### 9.2 Pillars

Customer supply pillars shall comply with IP34 of EN 60529 and also shall be hot dip galvanised in accordance with BS EN 1461 to prevent against corrosion and shall be properly vented.

The Customer Service Pillar shall be constructed of sheet steel and manufactured in 3mm thick steel including door and bottom plate. Typical dimension of the Customer Service Pillar can be found in [Appendix 8](#).

The Pillar shall include a full size back board of varnished (intumescent) marine plywood at least 15 mm thick or other approved non-hygroscopic material. Alternatively, a purpose-designed equipment mounting system may be used.

The extension plate, including the planted root portion of the below ground and 50mm of the above ground shall be protected by a bitumous coating.

The Pillar shall be mounted as per manufacturers specification on a 150mm thick foundation of mix ST2 concrete. After completion of the cabling the feeder pillar base shall be filled to 25mm below the door with rounded coarse aggregate conforming to BS 882 graded aggregate 14mm to 5mm.

A durable warning sign indicating “Danger 400 Volts” or “Danger 230 Volts” as appropriate, in 5cm high letters, shall be fixed to the front of the pillar where applicable.

Each pillar shall have a permanent label fixed externally which identifies it as a public lighting pillar.

The pillar doors shall be fitted with tamperproof locks, all locks being identical in pattern and two sets of keys shall be provided to Cork City Council & ESB. All hinges and locks shall be of stainless steel to BS 6105 or BS 970.

The LV duct from the ESB Mini Pillar shall enter the Customer Service Pillar on the left-hand side which is allocated to the ESB Cut-Out and Isolator Switch. The entry for cables shall be via the roof.

Earthing for the ESB Customer Service Pillar should be in accordance with the [ESB National Code of Practice for Customer Interface](#) (Latest Edition).

### **9.3 Electrical Cable Design**

The detailed cable design calculations shall be undertaken by a suitable competent Electrical Engineer on a suitable software such as Amtech or similar.

The designer shall design all circuit lengths in compliance with the discrimination requirements and voltage drops as stated in the electrical standards IS 10101:2020. The fault loop impedance values and disconnection time shall be in accordance with the requirements of Tables 41.1, 41.2 and 41.3 of IS 10101:2020.

PL lighting schemes requiring cable lengths in excess of 200 meters require careful design to meet the earth loop impedance requirements of IS 10101:2020.

Regional and Main local road public lighting schemes shall have its power supply infrastructure installed with a minimum of 25% spare capacity (MIC at Customer Service Pillar)

The provision of earth loop / fault level calculations and circuit disconnection (fuse rupture times) shall also be completed at the design stage.

Note: In some cases, Cork City Council may refer the electrical services designer to other Irish, UK or European Electrical Design Standards, e.g. BS 7671:18<sup>th</sup> Edition (UK wiring Regulations and / or associated guidance notes) etc.

Where ESB high voltage cables (11 KV / 22 KV) cables run in parallel with Exterior Lighting cables in ducts a minimum segregation of **300mm** shall be maintained. Where ESB high voltage cables and Exterior Lighting Cables cross they shall do so at right angles. The requirement of crossing at right angles also applies to gas mains.

Where upgrades to exterior lights on overhead ESB network poles is being undertaken, electrical isolation boxes (as produced by Killarney Plastics Limited, refer to Appendix 7) shall be fitted on the supply connection to each luminaire. These shall offer a minimum of IP65 protection. These isolator boxes shall be approved for use by ESB Networks and shall meet the requirements set out in the National Code of Practice for Customer Interface as published by ESB Networks. Cork City Council can advise the Developer with further information if required.

PL LV cables shall be sized for a future 25% additional load (and at least 25% additional length to a circuit) to allow for future extension. The spare capacity requirements shall be advised by Cork City Council at the design review phase.

The designer shall design the neutral conductor size as per the relevant standards in particular, in relation to use of 3 phase cabling in the use of discharge lighting which create significant third harmonic currents.

The designer should divide circuits such that:

- It avoids hazards and minimizes inconvenience in the event of fault or overcurrent.
- It facilitates safe inspection, testing and maintenance.
- It takes account of danger that may arise from the failure of the circuit.
- It reduces the possibility of unwanted tripping of RCDs due to excessive protective conductor currents produced by equipment in normal operation.
- It mitigates the effects of electromagnetic interferences.
- It prevents the unintentional energisation of a circuit that is intended to be isolated.

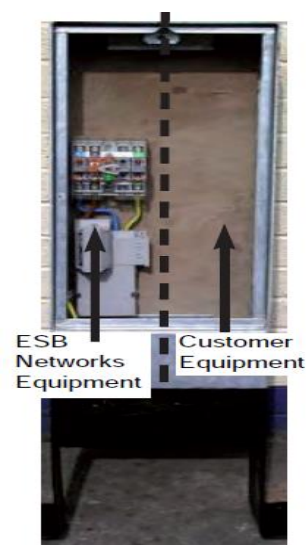
## 9.4 Circuit Isolation and Circuit Protection

### 9.4.1 Customer Service Pillars

An IP65 rated Public Lighting Distribution board shall be housed within the Customer Service Pillar. Cabling shall enter the distribution board from below via waterproof compression glands.

The distribution board shall contain as a minimum the below list of equipment. Please note quantities may change due to the number of PL circuits fed from the distribution board.

- Main Switch Fuse Disconnecter
- 10kV Surge Protector Device(s)
- Type C Miniature Circuit Breakers, ampere rating to suit load of the circuit
- Minimum 2No. Single Spare Ways.



Distribution boards where used shall be provided with an external earth, phase barriered and colour coded. They shall be fitted with the same number of live and neutral bus bar terminals as there are outgoing circuits plus at least one spare way.

The main Customer Service Pillar shall generally have a customer fuse with a rating of not greater than 25 Amps.

Circuit protection devices shall be Type C devices shall have a minimum rupture capacity of 16kA. Volt drop values, prospective fault current levels and disconnection and fuse rupture times shall be in accordance with those set out in IS:10101:2020.

The distribution boards shall have sufficient spare capacity to accommodate additional circuits (generally min of 25% spare ways). All components secured to the back board shall be neatly arranged and securely attached ensuring that there shall be at least 25% spare space on the back board.

Circuit details and labelling shall be provided by the means of a laminated chart fixed to the inside of each feeder pillar, with a circuit drawing provided as part of the safety file or take in charge procedure.

All pillars to be taken in charge by Cork City Council will be marked with a Deadsure Asset number to be indicated by Cork City Council.

#### 9.4.2 PL Column

PL columns and other equipment installed on the street within Cork City requires a means of local isolation.

The established practice of using a fuse carrier as the isolation and switching device is allowed for TN systems provided only authorized maintenance personnel carry out the works.

The use of circuit breakers (MCB's) in public lighting columns is **not permitted** by the Cork City Council Public Lighting Office.



Fused isolators such as Lucy MC040SLF fused cut outs, shall be used in Exterior Lighting Columns. Any isolation point within PL columns shall be designed to meet the criteria below as a minimum:

- Designed and tested in accordance with BS 7654
- 25A maximum fuse rating
- IP22 rating
- Single pole isolation
- Single fuse
- Electroplated brass terminals with serrated bores
- Maximum cable size of 16mm<sup>2</sup> stranded copper conductors

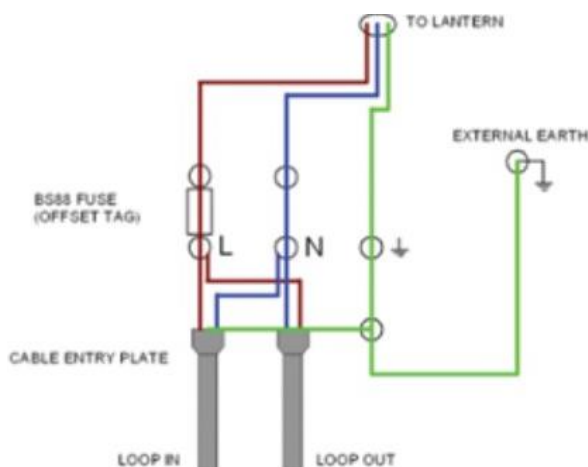
- Cable entry via PVC grommets as standard
- Outgoing cables exit below horizontal to form drip loop
- Sealing wire facility

For all maintenance works, a Lock out and tagging system of power isolation must be used in all power supply points. The tag must provide contact details of the Electrician who put in the tag in place and the date.

Cork City Council does not accept exterior lighting schemes that are centrally controlled from a contactor in the interest of energy conservation, scheme reliability and public safety. As mentioned previously, each luminaire shall have a photocell or sub-miniature photocell

All upgraded luminaires shall be controlled via an integral photocell and shall not make use of the Overhead Switchwire as was the practice the past. The switchwire connection or cable shall be removed when and where required by Cork City Council by ESB Networks operatives on Cork City Council's behalf.

Below is a typical wiring detail for a public lighting column with an electrical supply cable looped in and looped out to the next PL column.



## 9.5 Earthing

All earthing and bonding shall comply with the requirements of the National Rules for Electrical Installations IS:10101 and with any additional requirements.

Circuit protective and equipotential conductors shall be installed and shall be green/yellow PVC or XLPE insulated.

Where bolted connections are required, these conductors shall be terminated in accordance with manufacturers' instructions in correctly sized purpose made lugs. Such connections shall be made with non-ferrous nuts, bolts and washers.

The circuit protective conductor shall be of equal cross-sectional area to the associated circuit conductor except where it is contained within a composite cable when its cross-sectional area may be reduced as permitted in the National Rules for Electrical Installations.



All extraneous conductive parts, as described in the National Rules for Electrical Installations shall, where required in these Rules, be bonded to the main earth terminal in accordance with these Rules. A separate circuit protective conductor of not less than 2.5mm<sup>2</sup> cross-sectional area shall connect all metal enclosures of all electrical components to the main earth terminal.

A circuit protective conductor shall connect the earth terminal on each lantern to the main earth terminal associated with the service cut-out unit.

Earth electrodes shall be as per IS 10101 Sect. 542.2.3. All Customer Service Pillars must have an independent earth utilising either:

#### **Solid Copper Lattice Mat (Preferred Option)**

600mm x 600mm x 3mm (refer to Appendix 9) Solid copper lattice mats are often used for potential grading and are a preferred option on installations where touch and step potential could cause problems. Cork City Council recommend this earth for installation in Urban environments with the provision of an adjacent chamber where the bond to the lattice can be inspected.



#### **25mm Earth Strap**

The length of selection is dependent on the resistivity of the ground and should be installed in a trench which is situated at 180 degrees from the DSO earth.

#### **Earth bar**

A driven earth bar **must only** be undertaken with a full knowledge of the Utilities in the area including a full risk assessment. Earth electrodes shall be of the Copper plate type with an area of 1/2m<sup>2</sup> and set vertically at a minimum depth of 600mm from the ground surface to the top of the plate to ensure that the soil in close proximity is sufficiently damp as per IEE Guidance Note 8. Earthing & Bonding.

### **9.6 Unmetered Supplies**

Unmetered supplies apply to schemes where the electrical demand is less than 2kVA.

ESB Mini Pillar and Customer Service Pillars (micro pillar) shall be installed a minimum of two metres apart. PL Customer Service Pillar shall be sited so that is freely accessible to the public and in not permitted be erected on ground likely to remain private or inaccessible to the CCC PL maintenance contractor.

Earthing for the ESB Customer Service Pillar should be in accordance with the [ESB National Code of Practice for Customer Interface](#) (Latest Edition).



The Customer Service Pillar shall be constructed of sheet steel and manufactured in 3mm thick steel including door and bottom plate. Typical dimension of the Customer Service Pillar can be found in [Appendix 8](#).

The Customer Service Pillar shall be fed via an ESB Networks approved 100mm MDPE duct to a minimum of 100mm from the ESB's mini pillar vault to the Public Lighting Customer Service Pillar. This duct shall be RED in colour and shall be a continuous service duct with no breaks along its length. The duct must be accessible along its length

The electrical duct shall be buried at a minimum depth of 600mm with ESB Networks approved yellow warning tape 300mm below finished ground level along the full length of and over the electrical duct.

The LV duct from the ESB Mini Pillar shall enter the Customer Service Pillar on the left-hand side. Contractor to allow for 50mm x 50mm trunking to run ESB incoming cable to the top section of the pillar which is allocated to the ESB Cut-Out and Isolator Switch.

## 9.7 Metered Supplies

Metered supplies shall be installed on schemes where the electrical demand is greater than 2 KVA or where a metered connection is required by Cork City Council.

In the case of metered supplies, it is recommended that location of the meter supply cabinet be selected to cater for all further up-grades to lighting, traffic signals and signs etc. in the area with details to be agreed with ESB Networks.

ESB Mini Pillar and Meter Cabinet shall be installed a minimum of two metres apart. The meter cabinet shall be sited so that is freely accessible to the public and in not permitted be erected on ground likely to remain private or inaccessible to the CCC PL maintenance contractor.



The Customer Service Pillar shall be constructed of sheet steel and manufactured in 3mm thick steel including door and bottom plate. Typical dimension of the Customer Service Pillar can be found in [Appendix 8](#).

Earthing for the ESB Customer Service Pillar should be in accordance with the [ESB National Code of Practice for Customer Interface](#) (Latest Edition).

The Customer Service Pillar shall be fed via an ESB Networks approved 100mm MDPE duct to a minimum of 100mm from the ESB's mini pillar vault to the Public Lighting Customer Service Pillar. This duct shall be RED in colour and shall be a continuous service duct with no breaks along its length. The duct must be accessible along its length

The electrical duct shall be buried at a minimum depth of 600mm with ESB Networks approved yellow warning tape 300mm below finished ground level along the full length of and over the electrical duct.

The LV duct from the ESB Mini Pillar shall enter the Customer Service Pillar on the left-hand side. Contractor to allow for 50mm x 50mm trunking to run ESB incoming cable to the top section of the pillar which is allocated to the ESB Cut-Out and Isolator Switch and Electrical Meter.



The top section of the Metered Pillar shall be for the use of ESB equipment while the bottom section shall be for the use of Cork City Council equipment. The entries between the lower and upper section shall be no more than 50mm in diameter and fitted with plastic breakout grommets.

### **9.8 ESB Power connection Procedure**

The following items are required to allow ESB Networks to undertake a connection to an on street electrical power supply:

#### **MPRN**

A power supply application form must be submitted to ESB Networks, which when processed releases both a job number and a MPRN number ([see Appendix 10](#)). The MPRN relates to the point of supply and must be recorded for all future transactions in relation to the supply. The address submitted with the MPRN must always remain the same in future paperwork.

All customers are required to enter into a connection agreement with the Distribution Network Operator (DNO). This agreement sets out the terms and conditions under which a supply is taken from the DNO's network. The major part of the connection agreement will deal with the validation of the load connected to the network. It is essential that the inventory represent the customer's connected load, as it can be subjected to audit by the UMR. Any inaccuracies in the inventory could result in a factor being applied to the inventory to compensate for them. Power factor correction is one source of possible inaccuracy in measuring the electricity consumed and the DNO have the right to apply a factor to compensate for low power factor if they can demonstrate that it is below the level specified in the agreement.

#### **Ducting Certificate**

A ducting cert must be submitted to ESBN in reference to the Job number to certify the duct clearance between the ESB point of supply and the customer service pillar.

#### **Safe Electric Completion Certificate**

The electrical contractor shall provide a Completion Certificate for the exterior lighting scheme and shall be responsible for progressing the application for supply to completion and switch on of the scheme. The customer copy of the electrical test certificate shall be retained and submitted to Cork City Council's Public Lighting Office with the completed **Taking in Charge** form as detailed in [Appendix 12](#).

#### **Energy Supplier Nomination**

The customer must enter into a supply contract with their chosen supplier of electrical energy prior to connection.

Since 2000 the market for unmetered electricity supplies has been gradually de-regulated to allow electricity to be purchased from any licensed electricity supplier.

#### **Unmetered supplies**

The non-half hourly market requires the calculation of an Estimated Annual Consumption

(EAC) by the unmetered supplier operator (UMS) at the distribution network operator (DNO) to enable the consumption to be settled through the Balancing and Settlement Procedures.

Trading methods require the customer to submit an accurate inventory to the UMR for validation. There are UMR tables of approved equipment, charge codes (with watt ratings) and switching regime codes which must be used by customers in their inventory data. On validation of the inventory, the DNO will issue an Unmetered Supplies Certificate (UMSC), which must be made available to the prospective Electricity Supplier. Currently, all unmetered loads can be considered for inclusion on the Unmetered Supplies Certificate, provided the equipment has a predictable load and operating hours and is less than 2kVa.

**Metered installations**

UMR will require metering for equipment with an installed load greater than 2kVa. This is particularly relevant for equipment fed via highway power supplies from a feeder pillar. These types of supplies should be discussed with the DNO before the inventory is submitted and at the time the application is being made for new supplies.

## 10 Public Lighting Columns and Brackets

### 10.1 Columns Standards

Standard Reference	Standard Name
IS EN 40-1:1992	Lighting columns - Part 1: Definitions and terms
IS EN 40-2:2004	Lighting columns - Part 2: General requirements and dimensions
IS EN 40-3-1:2000	Lighting columns - Part 3-1: Design and verification - Specification for characteristic loads
IS EN 40-3-2:2013	Lighting columns - Part 3-2: Design and verification - Verification by testing
IS EN 40-3-3:2013	Lighting columns - Part 3-3: Design and verification - Verification by calculation
IS EN 40-4:2005	Lighting columns - Part 4: Requirements for reinforced and prestressed concrete lighting columns
IS EN 40-5:2002	Lighting columns - Part 5: Requirements for steel lighting columns
IS EN 40-6:2002	Lighting columns - Part 6: Requirements for aluminium lighting columns
IS EN 40-7:2002	Lighting columns - Part 7: Requirements for fibre reinforced polymer composite lighting columns
PD 6547:2004 +A1:2009	Guidance on the use of BS EN 40-3-1 and BS EN 40-3-3
BS EN ISO 1461:2009	Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods
BS EN 1991-1-4:2005 +A1:2010	Eurocode 1. Actions on structures. General actions. Wind actions
CD 354:2019	DMRB Vol.2 Highway Structures Design (Substructures and Special Structures), Materials. Section 2 Special Structures Part 1 BD 94/07 Design of Minor Structures (Formerly BD 26/99 & 26/04)
NRA BD 26/04	NRA Addendum to BD 26/04
BS EN 287-1	Qualification test of welders. Fusion welding. Steels
BS EN 288-9	Specification and approval of welding procedures for metallic Specification and approval of welding procedures for metallic

	materials. Welding procedure test for pipeline welding on land and offshore site butt welding of transmission pipelines. Welding procedure test for pipeline welding on land and offshore site butt welding of transmission pipelines.
BS EN 1011-1	Welding. Recommendations for welding of metallic materials. General guidance for arc welding
BS EN 1011-2	Welding. Recommendations for welding of metallic materials. Arc welding of ferritic steels
BS 7371-6:1998 +A1:2011	Coatings on metal fasteners. Specification for hot dipped galvanized coatings.
BS EN 10025-2:2004	Hot Rolled Products of Structural Steels – Part 2.
BS EN 10210-2:2006	Hot finished structural hollow sections of non-alloy and fine grain steels
BS 3643 - 2007	ISO Metric Screw Threads
BS 4190:2014	ISO Metric Black Hexagon Bolts, Screws and Nuts.
BS ISO 10474:2013	Steel and steel products -- Inspection documents

\* **Note:** Where contradictions or ambiguities arise between the standards, the standard listed higher in the order of precedence shall govern.

## 10.2 General Requirements

All columns install within the same scheme, whether over one or more phases, shall be of the same type and design unless otherwise instructed by Cork City Council.

Design calculations for columns and brackets are subject to review by Cork City Council. These shall be submitted with proposed exterior lighting scheme designs when requested by Cork City Council PL Engineer.



Exterior Lighting columns and ducts to be taken in charge for maintenance by Cork City Council shall **NOT** be erected on ground likely to remain private or inaccessible, e.g. private gardens, green areas, behind private walls, ESB / Bord Gáis Substation enclosures etc. All PL columns must be situated on accessible public access ways e.g. footpaths.

Public lights should not be erected beneath or adjacent to HV & LV overhead powerlines without explicit approvals from ESB Networks. For guidance on permissible distances in which a PL column can be located to the ESB overhead MV & LV lines please refer to ESB Code of Practice for “*Avoiding Hazards from Overhead Electricity Lines*”.

Hanging baskets are **not permissible** on any columns to be taken in charge by Cork City Council. However, column specification and associated windage calculations must include

for 1.5m<sup>2</sup> sign and assume a 1.5m bracket length, even where the current design does not call for a sign or bracket.

Cork City Council may require banner arms to be installed on exterior lighting columns at main city centre locations. The dimensions of these banners shall be specified by Cork City Council Engineer and both the column and foundation shall be designed to suit the requirements. The proposed shall be sent to Cork City Council for approval.

The lighting column manufacturer shall be registered with and certified by either NSAI, British Standards Institute of Quality Assurance Services or Lloyds Register Quality Assurance Register for the design, manufacture, supply and verification of road lighting columns and brackets under their quality assessment schedule to ISO 9001.

The quality assurance certification shall relate to the specific lighting column material being proposed. Cork City Council reserves the right to request proof of certification from the proposed column manufacturer.

Account shall be taken of any traffic management measures that may be required during the installation of exterior lighting schemes including compliance with [Chapter 8 of the Traffic Signals Manual published by the Department of Transport](#). This includes the requirement that a traffic management plan by a holder of a current valid Traffic Management Designer CSCS card and implemented on site by a current valid Solas CSCS Signing, Lighting and Guarding on roads license holder. Any non-lighting equipment (including signs etc.) may only be installed on exterior lighting columns with the explicit permission of Cork City Council Public Lighting Office or ESB Networks where applicable.

### 10.3 Column Specifications

Tapered Octagonal, Tubular or Multi sided hexadecagon (16-sided) galvanised lighting columns shall be selected for use on new and refurbished schemes.

Tapered octagonal PL columns shall be used as a standard type column for public lighting in Cork City. The PL columns shall be galvanized on both the inside and outside of the PL column to BS EN ISO 1461.

Tapered Tubular or Multi sided columns shall be use in area where a more decorative column is required. Multi sided PL columns shall be galvanized on both the inside and outside of the PL column to BS EN ISO 1461 and shall be painted to a RAL colour 9007 (Grey aluminium)



**Plain stepped tubular columns, widely used to date, are not acceptable to Cork City Council.** (This condition applies to all Exterior Lighting Schemes designed since the issue of Revision 1 of this document in January 2009).

Exterior lighting columns shall be designed to the EN 40 family of standards.

An earthing connection shall be provided in the base compartment. The fastening screw for this connection shall be stainless steel with an M8 coarse thread.

The structural loading on the columns and brackets shall be calculated by the proposed

column manufacturer / supplier in accordance with EN 40-3-1, using the Rationalised Wind Factor calculation as described in BS PD 6547.

The Rationalised Wind Factor (RWF) shall be: 587N/m<sup>2</sup> and the exposure category shall be Category II. (**Note:** Calculations using the 60 minute storm or the 3 second gust wind speed will not be acceptable.)

The structural design of the columns and brackets shall be verified by calculation by the proposed column manufacturer / supplier in accordance with IS EN 40-3-3.

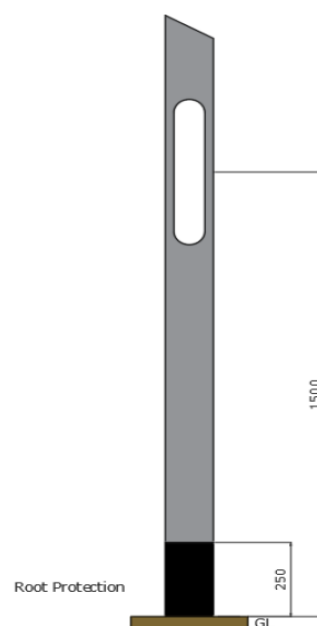
The partial safety factors used in the calculations shall be:

- a) Partial safety factor for materials 1.15
- b) Partial safety factor for dead loads 1.20
- c) Partial safety factor for live loads 1.40

Proposed column suppliers shall confirm that their columns have a design life of a minimum of 25 years in accordance with IS EN 40-3-3. The column and bracket assemblies shall conform with the deflection requirements of Class 2 as defined in IS EN 40-3-3.

When rooted columns are proposed, the column planting depth to be treated with a bituminous preservative on both inside and outside surfaces. The bitumen shall extend to 250mm above ground level as can be seen on the image to the right.

A marine plywood baseboard is to be fitted in each column. The baseboard shall have a minimum working area equal to the door opening. Three coats of intumescent varnish shall be applied to the baseboard in order to prevent fire propagation. The clearance between baseboard and inside face of door when secured to be not less than 100mm.



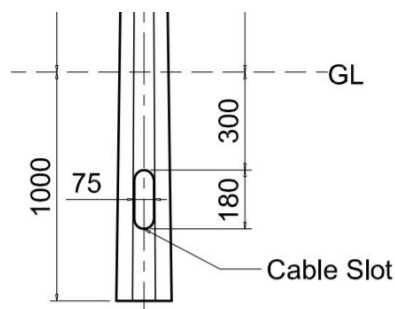
The clearance between baseboard and inside face of door when secured shall not be less than 100mm. The baseboard must be capable of being removed and replaced. Backboard fixings shall be recessed below the surface of the board so as not to impede the fixing of electrical equipment to the backboard. An earth terminal shall be provided in a readily accessible position at the bottom of the opening.

Lighting columns and brackets need to be protected from the effects of the weather, pollution and other environmental elements. Steel lighting columns will quickly deteriorate if they are not provided with, as a minimum, a protective system such as hot dipped galvanising. Further protection may also be given by the application of an additional protective system such as paint or powder coating.

All octagonal columns must be fabricated with **longitudinal welding only**.

A vertical cable entry slot with smooth edges, rounded at top and bottom and measuring 180mm x 75mm shall be provided in the column root. The entry slot shall be in line with the column door opening.

The top of the entry slot shall be at 300mm below ground level as can be seen in the image to the right in a typical column detail.



**10.4 Column Door Specification**

All PL column doors shall be of a standard size and be fully interchangeable. The column PL doors shall not require any site adjustment or modification.

The column door opening shall have a welded-in frame with an all-round weather strip. A flat steel door of minimum thickness 3mm secured by one (preferred) or two triangular head bolts.

The locking triangular head bolts shall have a narrow neck under the head to take a retaining washer. The bolt threads shall be lightly greased to prevent seizing or binding.

Bolts must be secured to an 8mm nut welded in place.

Nuts held by compression or clipped in place shall not be accepted.

**10.5 Column Heights**

The below table gives a typical PL column size with an associated location for design guidance. This may change as determined in a case by case instance.

PL Column Height	PL Column Location
6 meter columns	Lighting columns generally to be located within housing estates
8 and 10 meter columns	Lighting columns generally to be located on Local and Regional Roads
10 meter columns	Lighting columns generally to be located on National Roads
12 meter columns	Lighting columns generally to be located on Motorways/dual carriageways

**10.6 Anti-Vandal Columns**

Designers shall take into consideration the location at which an exterior lighting column is to be installed. The level of vandalism likely should be considered, more robust columns are required in areas of high instances of vandalism. Cork City Council Public Lighting Office shall be consulted on this point prior to selection of anti-vandal columns.

Anti-vandal columns are to be installed only in areas where a 30kph speed limit is in place.

The access door for the anti-vandal pole is to be installed 300mm below the full height of



the column.

The access door for anti-vandal columns must be 400mm by 100mm in dimension.

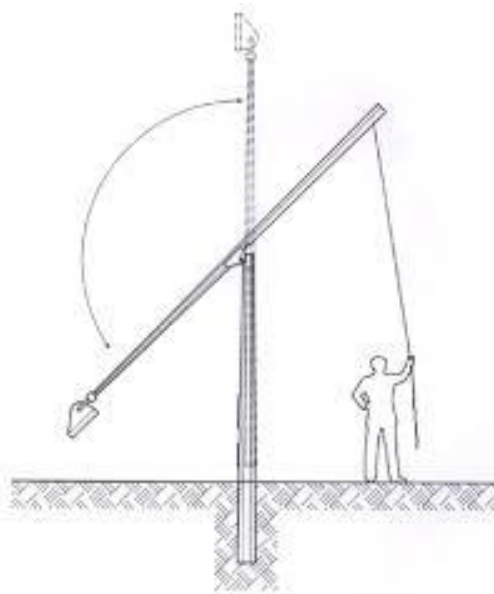
They shall be protected against corrosion by hot-dip galvanising to BS EN 1461.

### 10.7 Mid-Hinged Columns

Columns that are to be installed in locations inaccessible to a maintenance truck, e.g. on steps / embankments / narrow laneways etc. shall be of a hinged design to allow for maintenance. This shall allow the upper portion of the PL column to be lowered by hand to make the lantern accessible to the maintenance operative.

Hinged columns should be used in areas where road width is less than 3.5m and are inaccessible to maintenance vehicles.

Where columns are to be installed into parks and green spaces and hinged columns are deemed inappropriate, vehicular access must be provided for maintenance actions. The minimum paved width required for the maintenance truck fitted with a hoist is 3.5m. The paved width shall be laid out in such a manner that the maintenance vehicle does not have to reverse to egress the area.



The paved path must have sufficient structural strength to support the weight of the truck and the pressure of the truck stabilisers without incurring damage.

The hinged column must be orientated so that the upper section of the PL column does not clash with any other street furniture and nearby buildings when lowered to the ground.

The base hinged column must be capable of being lowered with a be rope and wince that can be used by a single operative.

All hinged columns must be delivered with a standard anti-vandal locking screw as standard.

Root mounted mid hinged columns is the preferred type of hinged column. Flange mounted hinge columns can be installed with agreement with CCC.

### 10.8 Passively Safe Columns

All passively safe lighting columns shall comply with BS EN 12767 with the appropriate energy absorption category and performance class selected based on speed limit and surrounding location.

The electrical supply to passively safe columns shall automatically electrically disconnect within 0.4 seconds to ensure that any vehicles that strike the columns do not become live



upon impact.

Passively safe plug and socket connection shall be used on all passively safe columns. This quick disconnect function will prevent PL poles and associated cables from becoming live conductors at crash sites.

Cable connector to be manufactured to BS EN 60309 and EN 12767.



Additional guidance on the implementation of passively safe columns can be found in ILP TR 30.

Chambers are required at each lighting column based on the electrical disconnection method used where passively safe columns are deployed.

Scheme designers shall consult with CCC and agree areas which required passively safe columns to be installed.

### 10.9 ESB Columns for Overhead Network Public Lighting

Currently all overhead network distribution poles are owned by ESB Networks until such time as they are formally handed over to Cork City Council and bear a Cork City Council Deadsure Asset number and logo.

Cork City Council may require the installation/upgrade of public lights on poles which are fed by the ESB overhead distribution system. This work will be carried out by the Cork City Council PL Maintenance Contractor in line with the ESB guidelines “ESB Requirements for Work on Public Lighting on ESBs Network”.

#### 10.9.1 Bonding of ESN Steel Columns

On identification of un-bonded ESB network steel poles, the Contractor shall notify the ESB Networks Customer Service Supervisor. Any proposed works shall stop immediately on the pole(s) until ESB attend site to carry out the required works on the ESN pole. Once confirmation of the bonding of the poles has been received from the ESB then the contractor can carry out their proposed works.

#### 10.10 Interface Box

An electrical interface box (as produced by Killarney Plastics Limited and shown in image to the right) shall be fitted to ESB Network poles where the lantern is fed directly from the ESN overhead network. The interface box shall provide a point of isolation between the ESN's overhead LV network and the Cork City Council's PL lantern. The box shall be IP65 rated as standard.



The interface boxes have been approved for use by ESB Networks and

shall meet the requirements set out in the National Code of Practice for Customer Interface as published by ESB Networks. Cork City Council can advise the Developer with further information if required.

Interface box shall be complete with 10kA/10kV surge protection device with remote LED lamp indicator at the bottom of the interface unit. This shall allow visual notification from the ground if the surge protection devices have been activated.

### 10.11 Brackets

Where outreach brackets are required for lighting performance reasons, both the columns and brackets assemblies shall conform to the deflection requirements of Class 2 as defined in BS EN 40-3-3.

The removable bracket arms for the columns shall be of steel construction and protected against corrosion by hot-dip galvanising to BS EN 40.

Bracket arms and column shaft shall be of the sleeve fitting type, with the bracket fitting snugly over the column.

Bracket arms and column shafts shall be fitted with a device to prevent rotation of the brackets in service. Eight unobtrusive socket screws shall secure each bracket arm to the column.

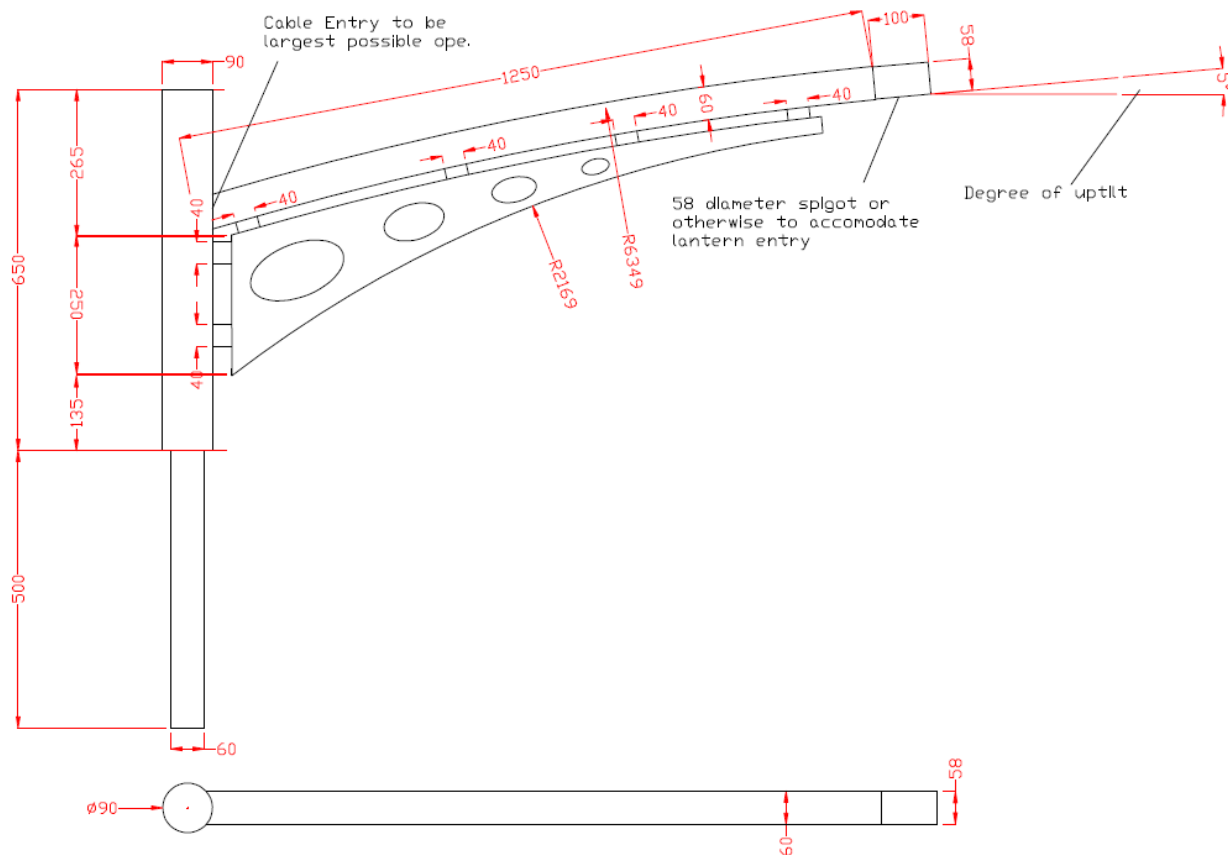
Brackets for use with ESB owned columns shall be as per ESB Requirements. However, any new PL lighting scheme shall not use ESB columns for the mounting of new PL lanterns. New dedicated PL columns shall be installed for the mounting of PL lanterns.

Outreach Bracket designs are to be approved prior to installation, particularly where decorative brackets are being used.

The use of outreach brackets on new installations is not encouraged by CCC's Public Lighting Department. Luminaires are generally desired to be post top mounted without the use of an outreach bracket, except where Cork City Council's Public Lighting Office permit the use of an outreach bracket. The Table below outlines the general requirements

PL Column Height	Bracket Outreach
6 Metre PL Column	Pole Top Mounted Bracket Preferred Max allowed outreach bracket 1.0m
8 Metre PL Column	Pole Top Mounted Bracket Preferred Max allowed outreach bracket 1.5m
10 Metre PL Column	Max allowed outreach bracket 2.0m
12 Metre PL Column	Max allowed outreach bracket 2.0m

Below is an image of the CCC decorative PL column bracket. Contact CCC regarding information on size, finishes and where items can be ordered from.



## 10.12 Quality Assurance & Delivery

### Material Workmanship

All materials and workmanship shall be of a suitable type and quality to ensure that the PL columns can be easily erected and they will operate satisfactorily over their design life in accordance with their specification.

### Quality Assurance System

Registration to ISO 9001 or equivalent is required. Fabricators shall provide evidence of current registration to this or other quality standards and shall provide a Quality Manual and an outline of the manufacturing process controls in English. Detailed information on Quality Procedures and Work Instructions shall be made available and provided as requested:

Details of particular quality requirements must also be observed, such as:

- Maintenance of a risk register
- Tests on raw materials used for hot rolled steel and each coil of raw material
- used for cold formed steel shall be carried out and the quality assurance
- procedure for this shall be supplied to the purchaser
- Recording of non-conformances and follow-up corrective action.

- Evidence of continuous improvement and reviewing of targets and objectives.
- Procedures and work instructions to ensure quality production and good traceability.
- Statistical records of Quality Control Tests
- Sample copies of completed statistical records on tests and quality control checks within the factory should be provided, in order to provide confirmation of Quality Control Procedures.
- Auditing.

**Sub-Suppliers**

The manufacturer shall fully declare all sub-suppliers of material associated with or used in the final product. This declaration shall include the sub-suppliers name and country of origin. All sub-suppliers shall have an implemented Quality Assurance system conforming to ISO 9001 or similar standard.

Each batch of poles shall have welding quality validation by sufficient random testing e.g. ultrasonic testing, fluorescent particle/dye penetration testing (ASTM E164/E138/E165) or destructive testing (hardness, micrographic, flattening etc, refs. EN 1043-1 / 1321 / 10233.

As a minimum, special attention shall be given to the following areas:

- 100% visual Inspection on all items in the consignment prior to corrosion protection (including removal of spatter)
- 1% NDE (Radiographic Inspection RT) on all items prior to corrosion protection
- 10% visual on all items after corrosion protection

**Nameplate/Markings**

Every pole supplied to Cork City Council shall have embossed nameplate attached to the steel pole at a height of between 1.5 and 3m from the butt of the pole. The information should not be embossed on the inspection door

The nameplate shall have the following information attached:

- Date of Manufacture
- Manufacturer
- Length (M)

**Delivery**

All packing for delivery shall be robust & strong enough to protect against transport risks, damage by water and open-air storage. The packing method must be resistant to impact damage from handling equipment and suitable for the applied weight load.

Skids or any other timber in contact with steel poles shall not be fresh lumber or of a type of wood that's very resinous which might affect the zinc coating on steel items.

Steel poles shall be bundled together fair ended (Broad end to tapered end) in pairs using steel banding with a width of at least 20mm and thickness above 2mm.

Rubber patches shall be placed between steel banding and points of contact on steel poles to prevent damage to the zinc coating.

Steel Poles shall be wrapped in a waterproof protective cover of 6m in width. The cover shall be centred on the pole to prevent possible damage from lifting by forklift or crane.

During handling of steel pole bundles, care shall be taken to avoid abrasion or damage to the poles and their coatings by cranes, forklifts, slings and ropes etc. Loads shall be balanced to avoid the slippage.

Steel poles must be shipped on flatbed trailers with side supports and without a roof to facilitate removal by forklift over the side. Clearances from the walls of the trailer of 500mm shall be maintained at both ends of the steel poles to prevent instability due to contact between the pole and the trailer during unloading by forklift.

Steel poles shall be protected from contact with salt water and sea spray.

**Installation**

The equipment will be installed by the Purchaser in accordance with the manufacturer's instructions. These instructions shall be clear, weatherproof and shall be specific to the poles being supplied. They shall cover all aspects of pole installation up to and including putting into service.

Each steel pole supplied shall be accompanied by a set of installation instructions. A copy shall be forwarded to Cork City Council on installation.

**Rejection of Work**

Cork City Council shall have the right to reject any work which is not carried out in accordance with this or any other agreed specification.

The cost of re-doing the work including the material cost and coating of the material shall be borne by the developer/contractor.

## 11 Civil Works

### 11.1 Cable Specifications

The electrical services design for all PL lighting schemes shall be undertaken to comply with the relevant sections of National Standards Authority of Ireland document IS:10101:2020.

NYCY cable to DIN VDE 0276-603 (0.6/1kV) shall be used throughout the PL installation. Steel Wired Armour (SWA) cable is generally not accepted due to maintenance restriction throughout the life of the installation.

All LV electrical cable serving the PL lighting network shall have a minimum of 2 internal cores (L & N). The Copper Wires and Tape between the outer sheath and internal insulation shall be combined to form the Earth core. The earth core shall be sleeved in yellow and green earth sleeving to ensure no exposed earth copper wire. The cores within the LV cable shall be sized with a cross sectional area of no less than 6mm<sup>2</sup>. It shall be the responsibility of the Lighting Designer to carry out cable calculations to determine the size of the cable taking into account the cable length, volt drop, distribution method etc. The cable calculations shall be submitted with all proposed designs.

All LV electrical cabling shall be run within the PL ducting system. No cable shall be run directly laid into the ground.

Cable joints are not permitted in any new development. Cables shall be looped from column to column on each circuit. If faults develop on service cables before commissioning/taking in charge of the development, the section of cable involved shall be replaced and not jointed. The ends of all cable cores shall be either lugged or ferruled prior to final connection.

Where existing lighting cables are affected by a new development prior agreement must be obtained from Council's PL office on any modifications. In rare situations where cable joints are allowed, only resin based cable joint kits such as 3M or Scotch-Cast are to be used. Heat shrink joints are not permitted.

Lanterns on new development schemes shall come from the lighting manufacturer / supplier with a pre-wired cable loom to the required length.

### 11.2 Ducting Specification

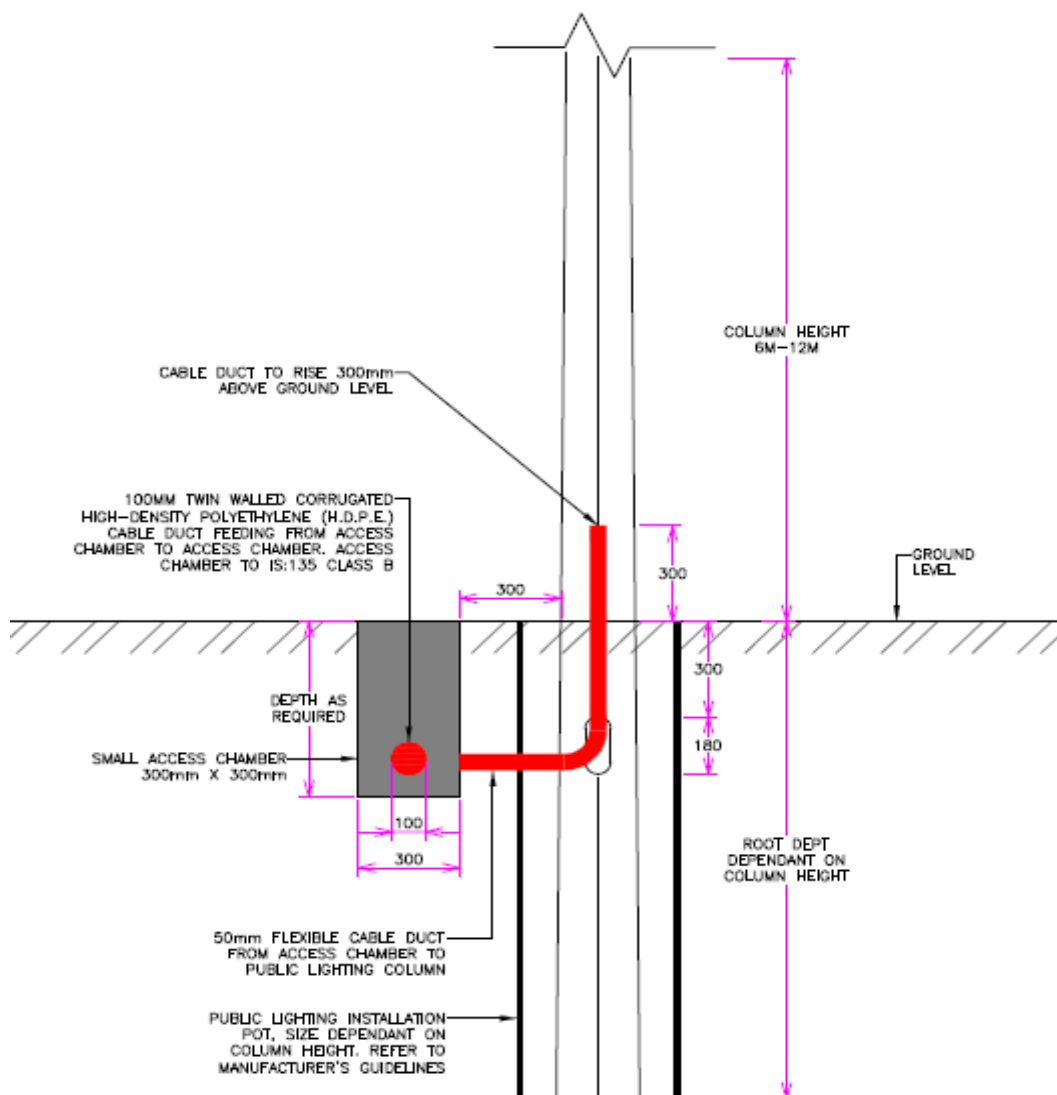
All public lighting ducting shall be located outside the boundary line of private properties. PL ducting must not at any time pass through utility chambers such as ESB, Open Eir, Virgin Media etc. The only PL duct that is permitted to enter an ESB chamber is the linking duct from the chamber in front of and ESB mini pillar to the Local Authority customer service pillar.

The ESB mini pillar and Local Authority customer service pillar shall be separated by a minimum of 2 metres as per ESB specification. The Local Authority customer service pillar can only be less than the ESB require 2 metres by agreement with the ESB Local Area

Manager.

Exterior Lighting ducting shall be 100mm diameter twin walled corrugated high-density polyethylene (H.D.P.E.) to IS:135 Class B unless otherwise advised by Cork City Council Public Lighting Office. The ducts shall be **RED** in colour.

Contractor to allow for 2No. 50mm **RED** flexible ducting to be run from the local access chamber into the PL column to facilitate a loop in and loop out of the electrical cable.



**Note:** UK standards specify orange ducts for Exterior Lighting cables. This is not compliant with the Irish Regulations IS:10101 requirements that red ducts be used for exterior lighting cables

An additional 100mm polyethylene twin walled corrugated orange duct serving the ITS network shall be install in tandem with the exterior lighting ducting when and where directed by Cork City Council. This shall be advised at the design phase.

The ducting must have the words “Public Lighting” stamped at 1m intervals. The letters must be 9mm in height.

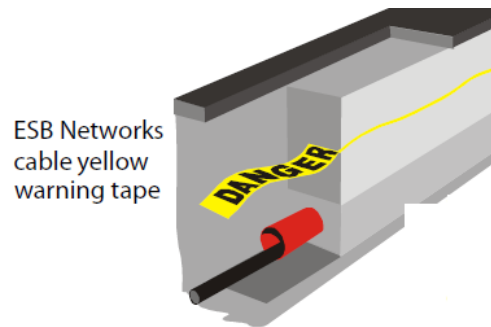


The PL ducting shall be laid in fully coupled unbroken lengths, which are accessed at the cable drawing-in stage by cutting at each lighting column access chamber or other termination point.

The PL ducting shall contain a 10mm diameter knot-free continuous draw-rope securely anchored at both ends. The duct must be kept clean and its ends sealed with a plastic cap or plastic wrapping following installation to prevent ingress of grit or stones which can damage cables. Ducting shall be properly coupled and all joints glued.

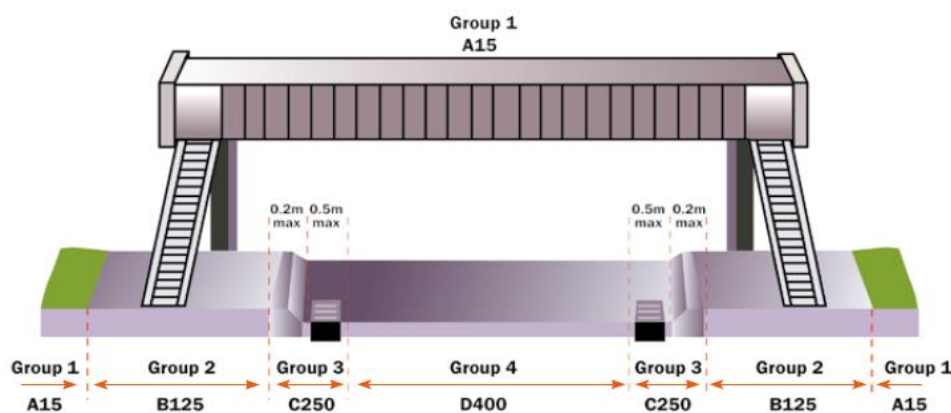
Ducts shall be buried to the correct depths as specified in the NSAI National Rules for Electrical Installations (IS:10101). Minimum cable bending radii shall be observed as outlined by manufacturer guidelines.

All ducts shall be marked with electrical marking tape at 300mm below finished ground level as per IS 10101.



### 11.3 Access Chamber Specifications

GROUP 1	GROUP 2	GROUP 3	GROUP 4	GROUP 5	GROUP 6
MINIMUM CLASS A15	MINIMUM CLASS B125	MINIMUM CLASS C250	MINIMUM CLASS D400	MINIMUM CLASS E600	CLASS F900
Areas which can only be used by pedestrians and pedal cyclists.	Footways, pedestrian and comparable areas, car parks or car parking decks.	For gully tops installed in the area of kerbside channels of roads which when measured from the kerb edge, extend a maximum of 0,5m into the carriageway and a maximum of 0,2m into the footway.	Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.	Areas imposing high wheel loads, e.g. docks, aircraft pavements.	Areas imposing particularly high wheel loads, e.g. aircraft pavements.



Access chambers must be provided at all access points for road crossings. Access chambers shall only be installed in Group 2 areas suitable for loading class B125 i.e. Footways, pedestrian areas and comparable areas.

All Inspection Chambers on carriageways shall have the same dimensions as those listed medium and large chambers. In all cases the chamber shall be to EN 124 Group 4,



Minimum class D400. Refer to image on previous page for the minimum class rating for each install location.

At road crossings, **2No. 100mm diameter twin walled corrugated high-density polyethylene duct** shall be installed to future proof any other potential road crossing requirements.

Suitable duct access chambers shall be used at all intersections, transverse road crossing locations, at every 50m of straight run of ducting and at every change of direction greater than 30°.

Duct chambers shall also be considered at locations where there is significant deviation along the route that would make cable pulling difficult and be prone to cable damage during installation.



All public lighting columns shall have a local access chamber at the foot of the column to allow for ease of rewiring in the future if required. A minimum of a small inspection chamber shall be located at the foot of the public lighting column, this may be required to be larger depending on the number on ducts and cables emanating from the inspection chamber.

Access Chambers can consist of either

- preformed polypropylene twin wall modular access chambers knock-outs for 110mm ducting or
- Standard concrete blocks on flat

The preformed polypropylene twin wall modular access chambers shall be formed in 3 sizes (small, medium and large)

**Large Chambers** shall be a minimum of 600mm x 600mm. Large chambers with dimension greater than this shall be formed access chambers of standard concrete blocks on flat.

**Medium Chambers** shall be either 450mm x 450mm or 600mm x 300mm

**Small Chambers** shall be 300mm x 300mm



Formed access chambers can use in situ concrete to make up the manhole walls directly under the frame. Mortar shall have 1:3 cement to sand dry volume ratios. The sand shall comply with BS EN 13139.

### Access Chamber Covers

All access chamber covers shall be ductile iron with galvanized steel frame as per [East Jordan](#) or similar approved. The opening of the access chamber shall not reduce the clear opening of the access chamber pit. The access chamber covers shall be marked with either “Public Lighting” or “Traffic” on the cover with M16 stainless steel locking bolt or similar approved. Locks shall make provision for replacement of the bolt and nut if damaged.

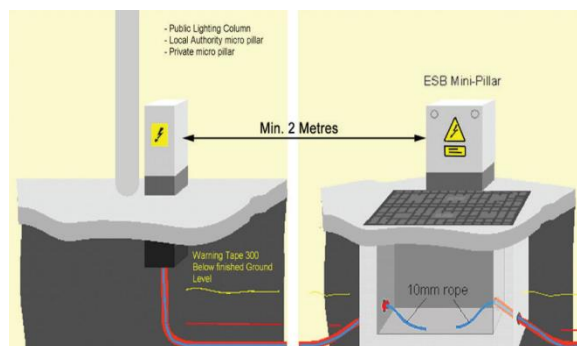
Tapping of frames is not permitted.

If similar approved, cover & frame shall be certified by an accredited Third party.

The access chamber cover shall be to EN 124 minimum class B125 where located within the pedestrian footway and EN 124 minimum class D400 where located within the carriage way of the road. Refer to image on the previous page for class requirements.

**ESB Mini Pillar**

ESB Networks Mini-Pillars and Customer Service Pillars (Exterior Lighting Micro-Pillars) shall be installed a minimum of 2m apart. If this is not physically possible and only with the explicit permission of ESB Networks and Cork City Council Public Lighting Office these may be installed closer together and equipotentially bonded in accordance with IS 10101.

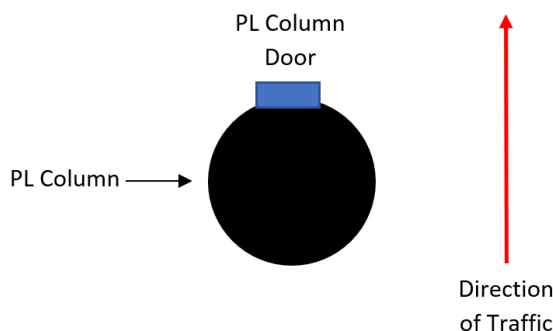


In all cases it is forbidden to utilise the same chamber to service both an ESB Networks (DSO) Mini-Pillar and Customer Service Pillar (Micro-Pillar). If this is found to be the case ESB Networks will likely refuse to connect the Customer Service Pillar and Cork City Council will not be in a position to take the scheme in charge.

Pre-cast concrete mini pillar chamber shall be installed as per ESB networks requirements.

**11.4 Column Installation**

The PL column shall be correctly aligned in the vertical position with the door opening facing away from oncoming traffic as shown in the image to the right



Columns must be erected securely and vertically in the exact positions indicated in the design drawings.

During Taking in Charge surveys, columns found to be in positions other than design locations unless previously agreed with Cork City Council or its representative must be relocated to the design positions.

Columns are to be installed in line with the recommended minimum clearances from the edge of carriageway to the face of the lighting columns in Table 1 of BS 5489:2020.

If any PL columns are to be sited adjacent to overhead ESB Network cable, the developer shall seek approval from the ESB design offices as to the exclusion zone with regards to the intended column height. Cork City Council reserves the right to request proof of this approval prior to TIC.

Columns shall be erected in line with the recommendations of EN 40-1 regarding planting depths of columns. The contractor shall confirm with the column manufacturer/supplier the

recommended depth for the root of the columns he proposes to use.

#### **11.4.1 Column Installed in sleeve**

Sleeved option is the preferred option of Cork City Council, agreement shall be sought from CCC to use a direct in ground or flanged columns type installation.

Where sleeves are used, a concrete or corrugated PVC pipe of approximately 450mm diameter shall be installed in a foundation excavation. It shall then be surrounded by a concrete mix prior to the erection of any PL columns. The root depth and extent of concrete surround is dictated by the column height and ground conditions.

Where the rooting depths to EN40-1 are unachievable due to existing services or ground conditions, the developer shall notify Cork City Council and an alternative option shall be agreed by both parties such as flange mounted columns. The developer shall seek written approval from Cork City Council agreeing to the design change.

Where flanges are approved for use, they must comply with EN 40-1. A fully calculated structural base for the mounting of the flange must be submitted to the Cork City Council PL Engineer for sign off.

The sleeved opening hole shall be pumped free of water prior to any filling with concrete. Columns shall be erected exactly vertical in a safe and workmanlike fashion using a suitable crane for hoist.

The incoming and outgoing PL electrical cables shall be protected by 50mm flexible RED ducting or Hydrodare piping or equivalent, extending 500mm into the column.

The cables shall be kept level with the bottom of the entry slot to avoid cable damage due to column settlement.

#### **11.4.2 Column Installed Direct in Ground**

PL Columns shall be erected by planting their root portions in excavation of suitable size.

The excavated hole shall be pumped free of water prior to any filling with concrete. Columns shall be erected exactly vertical in a safe and workmanlike fashion using a suitable crane for hoist.

Columns shall be secured by uniformly filling the hole with concrete around the base of the column up to the bottom of the cable entry slot. The concrete used shall be in accordance with the Department of the Environment Specification for Roadworks, Clause 1502, and Concrete for Ancillary Purposes (Class E).

The incoming and outgoing PL electrical cables shall be protected by 50mm flexible RED ducting or Hydrodare piping or equivalent, extending 500mm into the column.

The cables shall be kept level with the bottom of the entry slot to avoid cable damage due to column settlement.

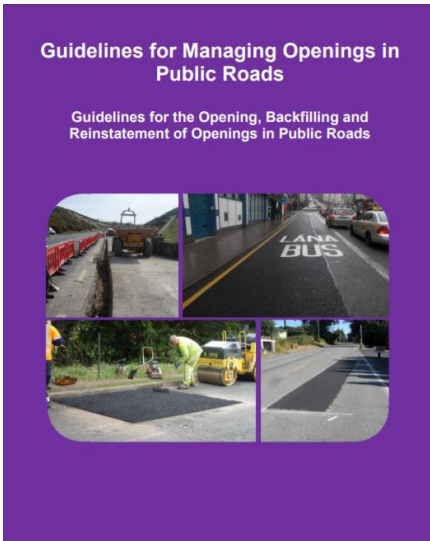
### 11.5 Trenching and Reinstatement Requirements

Where trenching or reinstatement works are required in the roadway (road, footway or grass verge) due to new PL works, then all reinstatement must be carried out in line with “Guidelines for the Opening, Backfilling and Reinstatement of Trenches in Public Roads” issued by the Department of The Environment and Local Government known as “the Purple Book”

All reinstatement must be carried out in line with CCC Road Opening Licence Conditions. Road opening licence shall be processed by the Roads Department within Cork City Council. The developer shall be liable for any road opening license fees and charges associated with the road opening licenses.

Refer to [Appendix 15](#) for typical reinstatement details at the rear of the document.

All footpath reinstatement is also to be carried out in line with the CCC Road Opening Licence Conditions. Section(s) are to be fully broken out between expansion joints and replaced with the same depth of concrete or min 100mm, where vehicular access min 150mm depth.



## **12 Street Lighting – Equipment Manufacturers & Suppliers**

Lighting schemes implemented by Cork City Council have included equipment that has been manufactured by various suppliers. The Developer can contact the Public Lighting Office of Cork City Council for information on previously used manufacturers.

Contractor can also refer to the [Appendix 4](#) at the rear of the document.

## **13 Electrical Contractors**

Electrical Contractors shall be in a position to supply and install a complete PL Lighting scheme to comply with NSAI National Rules of Electrical Installation and shall be responsible for coordinating the application to ESB Networks for the connection and to an energy supplier for the supply of electrical power. The Developer shall bear the cost of the new connection fee and will pay the energy bill until the scheme is taken in charge by Cork City Council Public Lighting Office.

Where works for new PL Lighting schemes involve working on ESBN overhead network. The developer shall contact the CCC PL maintenance contractor to carry out these works. The CCC PL maintenance contractor is the only authorised contractor to work on the ESBN mounted Public Lighting equipment. Their contact details are found in [Appendix 3](#) at the rear of the document.

Refer to Appendices at the rear of the document for [ESB NC4 form](#) and [Taking in Charge forms](#) etc.

## 14 Temporary Lighting & Power Supplies

### 14.1 Temporary Lighting

In the cases where a Development will include for the replacement of an exterior lighting scheme Cork City Council may require that a temporary exterior lighting scheme be installed whilst construction works are undertaken. Instances where this may be required include but are not limited to:

- Where building supported exterior light fittings are removed to facilitate a development.
- Where extensive excavations are likely on “brown field sites” or where demolition of existing buildings will be taking place. (In this case Cork City Council and / or ESB Networks may deem that the risk of a live underground cable being excavated and damaged is high and arrange that the cable is isolated). In this case the Developer shall be responsible for the provision of temporary exterior lighting until such time as the new scheme is installed and commissioned.

Exterior Lights may only be removed with the **written permission** of Cork City Council.

The Developer shall submit a temporary lighting design to the public lighting department of Cork City Council for review and comment prior to removing any exterior lighting. The developer shall commission into service and maintain operational the agreed temporary lighting until such time as they replace the removed light(s) with a new PL lighting scheme. Failure to do this will likely result in the Developer being **liable** in the event of any Public Liability claim against him / the Council where exterior lighting is cited as a contributing factor.

Temporary lighting installations must take account of section 704 of the National Rules for Electrical Installations pertaining to construction sites. Due care also needs to be taken of the positioning and angles of temporary lights so as to minimize glare and prevent dazzling drivers and pedestrians.

Cork City Council or their representatives may request the repositioning of temporary lighting to mitigate the effect of glare or poor overall lighting levels/uniformity.

### 14.2 Temporary Power Supplies

The Public Lighting Office of Cork City Council do not provide temporary power supplies on street.

Illegal connections to Cork City Council’s power infra-structure will be deemed a **criminal damage** and Cork City Council will undertake appropriate proceedings against the relevant parties.

Event organizers must appoint an Event Manager and are fully responsible for the provision for a protected and appropriate power supply in accordance with the relevant standards. (including BS 7909:2011 Code of practice for temporary electrical systems for entertainment and related purposes).

Portable Generators are permitted with agreement with Cork City Council. The dbA noise level under full load and nominal load must be advised to Cork City Council during the licensing process.

The zone in which the temporary power supply provision is to be provided must be advised to ESB Networks.

The provision of a temporary power supply must provide earthing in accordance with BS 7430:2011+A1:2015 Code of practice for protective earthing of electrical installations. It is not permissible to utilize street furniture i.e. street lighting for the provision of an earth.

Lightning protection when provided must comply to BS EN/IEC 62305-1 to 4 Protection against Lightning.



## 15 Lighting Design Guidance for Specialised Schemes

### 15.1 Floodlighting Schemes

#### 15.1.1 General

Where floodlighting schemes of playing fields, pitches or courts etc. are being proposed by sports clubs, schools etc. it should be noted that these are subject to the **planning process**.

The energy efficiency of the proposed scheme must be central to the design process. The use of energy efficient floodlighting lamps and control gear is required.

#### 15.1.2 Standards

Floodlighting schemes shall be designed to the below list as a minimum, this is not an exhaustive list of applicable standards. The design shall choose the most relevant standards to their scheme:

- BS EN 12193:2018 Light & Lighting (Sports Lighting)
- CIBSE Lighting Guide 06 Sports Lighting

Floodlight luminaires shall be in accordance with:

- BS EN 60598-2-5:2015 Luminaires. Particular Requirements (Floodlights).

Floodlighting schemes shall incorporate recommendations of the ILP such as:

- Guidance Notes for the Reduction of Obtrusive Light GN01:2020

#### 15.1.3 Design

The lighting design should be designed by a competent lighting designer, this may include the use of the lighting suppliers in-house design service.

The choice of light source will depend on the type of colour rendering required.



**The scheme designer shall demonstrate to Cork City Council by way of a design submission that minimizes light pollution, eliminates as far as is possible light spill into neighbouring property and takes account of the “Campaign for Dark Skies”.**

The scheme designer shall take account of the location of the proposed scheme and the relevant environmental zone to which the scheme is situated within.

The scheme designer will aim to minimize or eliminate glare and light spill from the proposed lighting scheme.

The scheme designer shall take account the maintainability of the scheme following commissioning, this will including site access, working at heights, combined generator and grid connections etc. The designed scheme shall have a robust design risk assessment carried out in relation to the future maintenance of the floodlighting scheme.



All flood lighting schemes shall incorporate the facility to cater for training lighting level rather than against competition / events lighting levels. The scheme shall allow for a reduced level of lighting to be achieved when full illumination levels are not required. This is in the interest of reducing energy consumption as well as sky glow.



Once a scheme has been installed the developer shall carry out lighting level measurement around the parameter of the floodlighting scheme to determine the lighting spill outside the intended area. If levels are higher than the permitted values then the Contractor shall make modification to the luminaire positions to ensure the permitted values are reached.

The scheme designer shall take account of the location of the proposed scheme in relation to the requirement for an aircraft warning light on the top of the light support structure (e.g. in the case of high structures). In this regard the Irish Aviation Authority may need to be consulted.

## **15.2 Night Time Lighting of Buildings & Structures**

### **15.2.1 General**

Proposals to light buildings of particular merit are of interest to Cork City Council in an effort to promote an enhancement to the night-time scene in Cork. These Guidelines have been drawn up as part of a strategy to ensure that lighting schemes are designed & implemented in line with sustainable development policies.

It is envisaged that the design proposals would meet Best Practice criteria to provide a “Low Brightness” approach to lighting thus ensuring that an energy efficient scheme can put in place from the outset.

LED lighting and fibre-optic sources can be used to highlight architectural features with much lower energy levels being required to deliver the desired impact.

Night time lighting of buildings should be limited to a **dusk to midnight** unless located in a town centre location likely to be occupied well after midnight.

Building/monument lighting schemes should in general be designed to switch-on at dusk with photo-cell control and be switched off at mid-night using a timeclock or part night photocell.

The daytime appearance of luminaires, electrical cables and associated equipment is an important consideration, designers shall try to conceal fittings behind shrubs, trees or building features so they don't become an eyesore in the day time.

The Public Lighting Office is available to discuss proposed building façade / Statue or monument lighting schemes in the city with a view to ensuring that a “Low Brightness” approach is adopted. Lighting Design for new and replacement schemes should take

account of these Guidelines to ensure that attractive energy efficient schemes are implemented.

### **15.2.2 Standards**

The lighting design shall be in accordance with the following standards as a minimum. Please note this is not an exhaustive list of applicable standards. The designer shall choose the most relevant standards to their scheme:

- BS 54891:2003 Code of practice for the design of road lighting and public amenity areas
- EN 13201-2:2003 Road lighting performance requirements
- ILP guidance note 01:2020 Guidance note for the reduction of obtrusive light

### **15.2.3 Design Principles**

The building lighting design should meet the requirements of the urban night lighting standards and be synchronized with the Cork City Council's principles of public and amenity space lighting.

The brightness and lighting power density values shall comply with the require light level standards. Choose energy-efficient light sources and high-efficiency luminaires, and avoid unrestricted use of light sources and luminaires, resulting in wasted energy.

Reasonably choose the light source, lamp and lighting method. Designers should make effective use of the colour rendering index of different light sources, the light distribution curve of different lamps, and the varied lighting control methods to achieve the best artistic and visual effects.

Reasonably determine the installation position, beam angle and shading measures of the lamps to avoid light pollution and glare.

Choose coloured light carefully. The light colour selected by the night lighting design should not be visually confused with the traffic lights, shipping and other identification lights while ensuring coordination with the illuminated object and the characteristics of the area.

Lighting facilities should take corresponding safety precautions according to environmental conditions and installation methods.

### **15.2.4 Design Information**

The design should be undertaken by a professional lighting designer, being a service that is often made available by Engineering and Architectural Consultants, in liaison with lighting equipment manufacturers.

A visualization software suite shall for submission of the lighting design be utilized to demonstrate the lighting schemes on building facades and structures.

The designer shall provide rendered images of the proposed building façade, statue etc. that is being lit. In certain case Cork City Council may ask to review the lighting design

model file and request this from the lighting designer.

Choose an LED colour temperature sympathetic to the building material being lit. Cork City Council to agree the colour temperature at design stage.

Selective highlighting of a building or its features should be considered as against floodlighting. Floodlighting project too much light onto a building destroying an appreciation of its architecture. The designer shall avoid mounting fittings parallel to the building.

The designer shall avoid using a small number of high wattage, wide-angle luminaires which will flatten the façade and wash out its features.

Ensure that beams do not spill over the roof or around the side walls as this will create light pollution or glare nuisance to neighbours.



**Where possible, spotlights or floodlights should be fitted with louvers and cowls to control the beam and avoid sideways light spill**

Consider the effect of glare to the people inside the building looking out through windows. Down lighting or spotlights located at close-offset positions to the wall or building will usually avoid such glare. Cork City Council generally **will not accept recessed in ground fitting** due to the water ingress and excessive maintenance required with the associated fitting.

For schemes being proposed for church buildings, the feasibility of providing back-lighting of the **stained-glass windows** should be considered if the particular feature is visible to the public.

Amenity lighting may also have to be considered at the design stage to compensate for glare and ensure safe access to the building after dark when the floodlighting is in operation.

It is accepted that lighting schemes may need to be modified to take account of changes recommended at the final installation stage as a result of on-site trials. These details will need to be confirmed at that stage with the Client, Contractor and Cork City Council.

## 15.3 Lighting of Short Tunnels

### 15.3.1 General

When a section of roadway is spanned, be it by another roadway, rail network, a building or other such cover, it effectively forms a short tunnel.

The process of doing this potentially introduces risks to the highway users such as:

For motorists

- are they able to see other users, gauge their intent and understand their task to navigate through the tunnel

For pedestrians and cyclists

- are they able to see the other users and gauge their intent, be aware of any trip hazards

- do they feel safe from a perception of crime and disorder when entering and exiting the tunnel

The desired outcome of lighting design for short tunnel is that all users will feel safe when approaching, entering, using and departing a short tunnel and they can all identify their own specific visual tasks and as a result the potential for accidents or crime is mitigated.

### **15.3.2 Standards**

The lighting design shall be in accordance with the following standards as a minimum. Please note this is not an exhaustive list of applicable standards. The designer shall choose the most relevant standards to their scheme:

- The ILP Professional Lighting Guidance 09 – Ensuring Visibility in Short Tunnels (PLG09)
- BS 5489-2:2016 Code of practice for the design of road lighting. (Lighting of tunnels)
- BS 5489-1:2020 Design of road lighting. Lighting of roads and public amenity areas. Code of practice
- CIE 88:204 Guide for the lighting of road tunnels and underpasses

### **15.3.3 Design Principles**

It is considered that the tunnels / underpasses that are for the sole use of pedestrians and cyclists, as detailed within BS5489-1:2020 adequately cover the requirements for the users. The same generally applies to tunnels that are solely for motorised vehicle use, the requirements are adequately covered by the application of BS5489-2:2016. For tunnels with mixed user then ILP Professional Lighting Guidance 09 Ensuring Visibility in Short Tunnels shall be referred to.

The design needs to determine what users shall need to be covered by the lighting design, pedestrians, cyclist and or motor vehicles so as to determine the correct lighting suitable to the particular location.

When determining the lighting design requirements, the lighting designer shall consider the following as a minimum:

- Length of the tunnel
- Tunnel profile
- Height of the tunnel
- Through-view quotient / view through percentage
- The depth of the black frame
- Traffic composition and speed through the tunnel

Lighting designer shall refer to the procedures in PLG09 to determine if daytime artificial lighting is required within short tunnels.

## **15.4 Lighting on Bridges**

### **15.4.1 General**

Proposals to bridges of particular merit are of interest to Cork City Council in an effort to

promote an enhancement to the night-time scene in Cork. These Guidelines have been drawn up as part of a strategy to ensure that lighting schemes are designed & implemented in line with sustainable development policies.

The lighting designer should ascertain whether the bridge is a monument or protected structure before a design is undertaken. The lighting designer shall contact cork city council for the status of the bridge prior to the beginning of their design.

Where bridges carry the road system without significant change of gradient or direction, it is likely that the lighting system on the bridge approaches can be continued across the bridge.

However, bridges lacking in significant surrounding landscape features or background, or those arched to create central crests, can create conditions of glare with reduced luminous foreground or confusing forward scene, each of which reduce the forward view of the motorist. Motorists approaching the bridge can experience glare from lights on and beyond the crest and have a reduced length of visible lit road before them. Beyond the crest, their forward view can be confused by the presence of road, vehicle and building lights occurring in the near and/or distant fields of view. The lighting designer need to understand the type of bridge that is being lit and apply the best approach to designing the lighting on the bridge.

The lighting design and selection of components should be such as to minimize the night-time impact of the road lighting on the community.

#### **15.4.2 Standards**

The lighting design shall be in accordance with the following standards as a minimum. Please note this is not an exhaustive list of applicable standards. The designer shall choose the most relevant standards to their scheme:

- IS 10101:2020 National Rules of Electrical Installations
- BS 5489-1:2020 Code of practice for the lighting of roads and public amenity places
- BS EN 13201:2015 Road Lighting – Performance Requirements

#### **15.4.3 Design Principles**

The scheme designer shall take account of the location of the proposed scheme and the relevant environmental zone to which the scheme is situated within. The designer will aim to minimize or eliminate glare and light spill from the proposed lighting scheme.

The designer shall demonstrate to Cork City Council by way of a design submission that minimizes light pollution, eliminates as far as is possible light spill into neighboring property and takes account of the “Campaign for Dark Skies”.

A structural engineer should be consulted to ascertain the possible locations of lighting equipment on bridge structures and the limitations on weight and windage.

On large steel structures, vibration can be an issue, and the bridge’s technical approval authority should be consulted on the presence of vibration hotspots.

The strength and natural frequency of the assembly of lighting column, bracket and luminaire, when checked using the method of calculation given in BS EN 40 and PD 6547, this should be such as to minimize the possibility of detrimental oscillations occurring.

Lighting columns should, where possible, be mounted over piers and abutments, to render their height more aesthetically acceptable. With long spans it is sometimes necessary to have additional lighting columns between piers, but all luminaires should be at the same mounting height.

All customer service pillars and circuit protective devices shall be located adjacent to and not on the bridge structure. In the event of a fault, the electrical supplies can be isolated before a person needs to access the bridge.

Lighting schemes on bridges should in general be designed to switch on at dusk with photocell control and also switch off at dawn with photocell control in line with general PL luminaires. However bridge lighting for aesthetic effects shall in addition to this be programmable for specific periods in relation to colour, brightness, switch on and switch off.

Where lighting is being added to a bridge structure to enhance to esthetic of the bridge, CCC require the lighting to RGB colour changing type. The RGB colour changing lighting shall have the facility to be linked to a CCC central management system (CMS). The CMS will be an open protocol system and the RGB lighting shall be compatible with an open protocol system. CCC shall advise of the CMS system at design stage.

Any lighting fixed to or incorporated into the bridge structure should be a low voltage type to ensure the safety of the general public. The lighting system shall be earthed in compliance with IS 10101 when applied to large metal structures.

The need for lightning protection should be evaluated in accordance with BS EN 62305 (all parts) and IS 10101.

Maintenance of the lighting assets shall be adequately planned for during the design phase of any project. The lighting designer and CCC shall agree PL column locations, access chamber locations etc. to ensure the safety of person(s) required to carry out any maintenance work at a later date.

Where traffic management costs for accessing columns are likely to be significantly higher than for a standard road, long-life luminaires should be used.

## **15.5 Lighting of Footbridges, Steps & Ramps**

### **15.5.1 General**

Footbridges shall be illuminated if located in areas where public lighting is provided. A risk assessment should be undertaken to assist with the decision-making process of whether and when to light.

Lighting shall be designed at the outline design stage of any structure to help to determine the location of the chosen luminaires relative to their performance. This will better inform



where the electrical intake cabinets, wiring conduits and mounting facilities can be incorporated into the construction.

### **15.5.2 Standards**

The lighting design shall be in accordance with the following standards as a minimum. Please note this is not an exhaustive list of applicable standards. The designer shall choose the most relevant standards to their scheme:

- IS 10101:2020 National Rules of Electrical Installations
- BS 5489-1:2020 Code of practice for the lighting of roads and public amenity places
- BS EN 13201:2015 Road Lighting – Performance Requirements
- TII DN-LHT-03038 Design of Road Lighting for the National Road Network

### **15.5.3 Design Principles**

The scheme designer shall take account of the location of the proposed scheme and the relevant environmental zone to which the scheme is situated within. The designer will aim to minimize or eliminate glare and light spill from the proposed lighting scheme.

The designer shall demonstrate to Cork City Council by way of a design submission that minimizes light pollution, eliminates as far as is possible light spill onto adjacent areas and takes account of the “Campaign for Dark Skies”.

Recommendations for the lighting levels of footbridges, stairways and ramps has been outlined with lighting standards document BS 5489-1, please refer to table 3 within the document. There should be good visual contrast between the step and the riser on steps.

Consideration shall be given to illuminating footbridges by means of the road lighting where possible and additional lighting only provided for the footbridge to ensure recommended lighting levels are achieved.

Lighting of a footbridge can be either by columns or inbuilt in the railings / hand rails. The mounting of lighting columns on footbridge structures does need careful consideration in terms of maintenance access and any safety implications when mounted on structures above the road network or waterways.

On footbridges, the lighting units should be installed in such a manner as to complement the structure but ensure future ease of maintenance. The lighting should be low voltage type when incorporated within the footbridge railing / handrails for the safety of the general public. The lighting system shall be earthed in compliance with IS 10101 when applied to large metal structures.

Lighting schemes on footbridges should in general be designed to switch on at dusk with photocell control and also switch off at dawn with photocell control in line with general PL luminaires. However bridge lighting for aesthetic effects shall in addition to this be programmable for specific periods in relation to colour, brightness, switch on and switch off.

Where lighting is being added to a bridge structure to enhance to esthetic of the bridge,



CCC require the lighting to RGB colour changing type. The RGB colour changing lighting shall have the facility to be linked to the CCC central management system (CMS). The CMS will be an open protocol system and the RGB lighting shall be compatible with an open protocol system. CCC shall advise of the CMS system at design stage.

The need for lightning protection should be evaluated in accordance with BS EN 62305 (all parts) and IS 10101.

Maintenance of the lighting assets shall be adequately planned for during the design phase of any project. The lighting designer and CCC shall agree any PL column locations, access chamber locations etc. to ensure the safety of person(s) required to carry out any maintenance work at a later date.

#### **15.5.4 Lighting of Footbridges over Roads**

Where a footbridge crosses a lit road, A calculation should be carried out in accordance with BS EN 13201-3, on a grid overlaid on the footbridge walking surface, this is to verify that the lighting on the footbridge is sufficient. Additional lighting should be installed where necessary to supplement the existing road lighting.

Where a footbridge crosses an unlit road, any lighting on the footbridge should be designed to minimize its visible intrusion and glare on the road running beneath it.

In all cases, the lighting equipment should be kept as inconspicuous as possible in daytime, and both its design and its siting in relation to the footbridge structure should be suitable. In new footbridges, lighting equipment should be incorporated as an integral part of the design and not added as.

#### **15.6 Lighting of Cycle Tracks**

Guidance on the lighting of cycle tracks is provided in the ILP Technical Report No. 23.

#### **15.7 Lighting of Pedestrian Crossings**

Guidance on the lighting of pedestrian crossings is provided in the ILP Technical Report No. 12.

## **16 Review of Exterior Lighting Schemes**

Street lighting designs must be submitted to Cork City Council Public Lighting Office for approval in line with Planning Conditions prior to commencement of construction on site.

The lighting design details submitted for approval shall comprise of the items outlined in the [Design File](#) in Section 8 of this document.

Cork City Council will on receipt of the submitted material will review and advise the Developer if the proposed exterior lighting design and layout meets the requirements of this guidance document and the standards specified within it. If the design and layouts does not meet these standards the Cork City Council will advise what areas of the design need to be improved / amended or changed so the scheme is acceptable to proceed to construction stage.

The Cork City Council Public Lighting Office endeavours to advise of its review of exterior lighting scheme designs within four weeks of receipt of all required information.

**Note:** Cork City Council currently uses Lighting Reality Software for exterior lighting scheme design undertaken in house.

In this regard, Exterior Lighting designs in **RTMA file format** shall be submitted to the Council at the design review stage and if applicable again at the take in charge stage.

## 17 Taking in Charge

### 17.1 General

The taking in charge of a lighting scheme is a separate procedure whereby the Developer shall satisfy Cork City Council and the DSO (ESB Networks) that the scheme conforms to the NSAI National Rules for Electrical Installations (IS 10101) and ESB standards. The Developer shall also satisfy Cork City Council that the layout and levels of lighting conforms to the CEN Code of Practice the Cork City Council Design Document.

The Take in Charge form is available in [Appendix 12](#) at the rear of this document. A Developer wishing to have an exterior lighting scheme taken in charge for energy and maintenance shall complete this form and submit it to the Cork City Council's Public Lighting Office, along with the following as a complete package:

- As built lighting layout drawings in both hard & soft copy format showing the lantern locations, ducting routes and pillar locations
- As built electrical drawings (DB schedules and circuit diagrams)
- As built PL column drawing shall be provided with physical dimensions including all details necessary for the design of foundations, support fixings, high voltage connections, and equipment layout. These drawings shall be labelled clearly in a legible font size
- Appropriate standard construction details (SCD's)
- Cable calculations (performed on software such as Amtech or similar)
- Exterior lighting design report
- A signed copy of the electrical test certificate for the exterior lighting installation
- An energy supply bill showing the account cleared to date
- Evidence of warranties transferred to Cork City Council

The Cork City Council's Public Lighting Office endeavours to undertake an inspection of an exterior lighting scheme following receipt of a correctly completed request for Take in Charge of exterior lighting schemes within four weeks.

On completion of the inspection which will typically be undertaken by both City Council Staff and / or Maintenance Contractor staff (or another electrically competent agent of Cork City Council), a snagging list shall be compiled of outstanding issues if any are found and issued to the relevant parties for rectification.

When the Developer confirms that the snagging list has been completed a further inspection will be undertaken. In the event that the snagging list has not been completed to the satisfaction of the Cork City Council's Public Lighting Office, the Developer shall be informed. Should further intrusive inspections be required, Cork City Council reserves the right to charge the inspection cost to the Developer, to be paid prior to commencement of the inspection. This shall be charged at the discretion of the Cork City Council's Public

Lighting Office at a rate of not less than **€200 Excl VAT per inspection**. Inspections requiring significant time and resources may be charged at a higher rate at the discretion of Cork City Council.

When Cork City Council confirms that the exterior lighting scheme is in a suitable condition to be taken in charge, it shall inform the Developer by means of a formal letter. The Planning and Development Directorate (which oversees the entire take in charge procedure for developments) may request that the Exterior Lighting Scheme in a development is taken in charge at the same time as the remainder of the Public Domain in that development.

Typically in this case the Cork City Council Public Lighting Office, requires that the Exterior Lighting Scheme be maintained operational and in the same condition as it was when the snagging list was completed to the Public Lighting Office's satisfaction by the Developer.

Cork City Council will also require that each column and customer service pillar installed have "Cork City Council" style label attached with a numbering scheme agreed with the Developer at the taking in charge stage. This is to allow for maintenance coordination, column / luminaire identification and recording of the individual column in Cork City Council's Exterior Lighting Asset Management Database.

## **17.2 Visual inspection of electrical equipment**

The nature and location of public lighting installations is such that visual inspection of the electrical equipment and wiring is of paramount importance. The condition of the electrical equipment and wiring should be visually checked at each cyclic maintenance or repair visit and its condition reported back to the client. So far as reasonably practicable, the visual inspection should verify that the health and safety of persons, animals and property is not endangered.

The general visual conditions of the electrical installation should be noted on the inspection report. However, if any particular item causes concern, it is recommended that the problem be detailed on an appropriate supporting schedule.

During the visual inspection, any dangers should be identified that may arise during the testing procedure. The operative should take any necessary action and implement safety precautions to avoid danger. Where a problem is considered as dangerous, the item of equipment should be repaired immediately or taken out of service by removing the main fuse from the supply termination until the fault has been rectified. Under no circumstances should an electrically dangerous item of equipment be left in operation.

Fuses or other circuit protection devices should be checked for correct type and value and if necessary, replaced.

The presence of electronic devices on the system should be identified and recorded as such items may be damaged during testing. Such items may have to be disconnected from the circuit to allow testing of the remaining installation.

Failure to carry out an electrical inspection must be recorded in the operative's report. A

record should be made of any departure from the regulations.

Operatives should be trained and competent to carry out visual inspections and recognise any potential dangers

### **17.3 Format of Drawings**

To manage the LV power supply effectively a GIS system or standalone AutoCAD drawing file system shall be submitted to record electric equipment on layout drawings. This shall be saved in a 2013 or older version.

### **17.4 Underground Cables**

All power supplies shall be recorded in accordance with IS EN 50110-1:2004 and the SHAWW (General Application) Regulations 2007

It is necessary to record accurately underground cable networks so that:

- Repairs to power supplies can be carried out effectively and safely in compliance with the Safety Legislation.
- Testing of cable networks is facilitated.
- Extensions or alterations to power supplies can be adequately designed.
- The “Supply point” data can be entered on the asset management system enabling supply failures at supply points to be treated as priorities for repair.
- Information showing highway power supplies can be provided to any organisation excavating in the highway.
- Joint repairs can be identified as weak points of failure in the cable network for future maintenance faults.

Power supply records should record the following information:

- Source of supply (supply point).
- Route of cables.
- Position of cables (including offset and depth).
- Type and size of cables.
- Position of cable joints.
- Three-phase or single-phase.
- Location, type and rating of protective devices.
- **ALL** Feeder pillars shall be fitted with cable circuit schedules. These shall be laminated and fixed to the back of the customer service pillar

### **17.5 Electrical Inspection and Testing**

Testing should only be carried out by a competent person with sufficient training and

experience to interpret the test results and identify any inherent problem within the installation. All test equipment should be suitable for the test intended, correctly calibrated and regularly certified.

The SHAWW Act 2005 states that “As may be necessary to prevent danger, all systems shall be maintained so as to prevent, so far as is reasonably practicable, such danger”.

To demonstrate that an installation meets the necessary safety standards, electrical inspection and testing comparable to any other fixed equipment installation should be carried out. Electrical inspection and testing should be carried out at intervals of up to six years in accordance with the requirements of NSAI IS 10101:2020.

The frequency of the electrical inspection and testing should be determined taking account of the following:

- The type of installation
- The use and operation the installation is subject to
- The frequency of maintenance
- Any external influences which exist
- Past history of inspection and repair

The co-ordination of electrical inspection and testing with other cyclic maintenance activities should be considered to help reduce disruption to the public. However, this may not be the most cost effective means of carrying out this operation and separate personnel may be needed for this purpose.

### **17.6 Electrical testing records**

The results of periodic electrical inspection and testing must be recorded on an inspection certificate.

Records of maintenance, including electrical test results, should be kept throughout the life of the installation, enabling the condition of the equipment and the effectiveness of maintenance policies to be monitored. A computerised asset management system will allow electrical test certificates to be linked to the specific individual item of equipment, thus meeting the demands of the regulations and providing an efficient maintenance system.

**All information will be collated on Cork City Council's  
Deadsure Asset Management system.**

### **17.7 Access/Modifications to the Power supply network**

All access to Cork City Council's power supplies is forbidden without express written approval. To undertake any work on any power supply, the following is required:

- Written Permission

- Full description of the nature of the work
- Full design to be forwarded for any works to be undertaken
- A Registered Contract Electrician must originate the request
- A method statement and risk assessment must be submitted
- Full insurance requirements
- Proof of contact with ESNB where applicable

All modifications to Cork City Council's power supplies are forbidden without express written approval. Once the above steps are submitted and approval has been received, any additional circuit added to the point of supply requires a sub system certification in accordance with Safe Electric completion certificate No.3 (Completion Certificate for Existing Installations) and the National Rules for electrical installations 5<sup>th</sup> Edition IS 10101:2020.

All installations which are requested to be Taken in Charge 12 months following installation require the submission of a periodic inspection certificate to Cork City Council in accordance with Part 6 of the National Rules for electrical installations IS 10101:2020 as per [Appendix 11](#).



## **18 Warranties**

Cork City Council requires a collateral warranty of equipment from the manufacturers prior to take in charge of schemes for maintenance and energy supply. Developer/Contractor shall submit written details outlining that the Original Equipment Manufacturer's warranty has been transferred to Cork City Council. The following warranty details will be required:

### **Columns and Brackets**

The steel poles shall be designed to provide a minimum 25 year lifetime when operated in the environment conditions as described in this document. The poles, including all components and accessories, shall be fully guaranteed against all defects arising from faults in design, manufacture and workmanship for a period of 12 months from commissioning and up to a maximum period of 36 months from delivery. This period shall be extended to 5 years to cover all defects attributable to inadequate corrosion protection. All defects notified within the above warranty periods shall be rectified entirely at the Installers expense.

### **Photocells**

A minimum warranty of 10 years is required on all installed photocells

### **CMS Systems**

A min warranty of 5 years is required on all installed CMS systems

### **LEDs including drivers**

All LED equipment provide a full warranty period offered on the complete luminaire (including LED modules, LED Driver and photocells) of a minimum of 8 years.

## 19 Further Information

Cork City Council reserves the authority to ensure that exterior lighting schemes are installed to the required Code of Practice before the scheme can be taken in charge with the purpose of providing for energy and maintenance costs.

Further requests for information should be directed to Public Lighting Office, Cork City Council. We can give further guidance on exterior lighting scheme design layouts etc. and answer questions pertaining to the two exterior lighting standards covered in this guidance manual, BS 5489-1:2020 and EN 13201:2003.

Cork City Council Public Lighting Office wish to work with Developers to help deliver high quality, energy efficient, exterior lighting installations which meet the relevant standards and which improve the general ambiance of the city and help to reduce energy consumption.

The electrical section is also available to advise on any other electrical installations that may require Cork City Council input and are contactable as follows:

Public Lighting Office,  
Roads & Traffic Management  
Cork City Council,  
City Hall,  
Anglesea Street,  
Cork,  
T12 T997.  
Email: [traffic@corkcity.ie](mailto:traffic@corkcity.ie)

# Appendices

## **Appendix 1 - Decorative Lighting Columns**

### **Decorative Street Lighting, Columns & Equipment Manufacturers and Suppliers**

Decorative Lighting schemes previously implemented by Cork City Council have included equipment manufactured by various suppliers including the following:

#### **NERI Lighting**

Bradgate Lighting & Furnishings Ltd.,  
PO Box 45837,  
London,  
E11 2WN  
England.

Contact: Brian Bradley  
Phone: +44 (0)7 860 583 361  
Email: [neri@bradgateltd.com](mailto:neri@bradgateltd.com)  
Web [www.neri.biz](http://www.neri.biz)

#### **DW Windsor Lighting & Stainton Exterior Lighting Columns**

Street & Park Equipment Co Ltd.,  
P.O. Box 2134,  
Swords,  
Co. Dublin.

Contact: Colm Carton  
Phone: +353 (0)1 840 0633  
Email [info@streetandpark.com](mailto:info@streetandpark.com)  
Web [www.streetandpark.com](http://www.streetandpark.com)  
[www.dwwindsor.com](http://www.dwwindsor.com)

## **Appendix 2 – Standard Lighting Column**

Lighting schemes previously implemented by Cork City Council have included columns and brackets manufactured by various suppliers including the following:

### **Lampost Construction Components Ltd**

*(5m–12m Tapered octagonal and 16-sided columns)*

Lampost Construction Components Ltd,

Greenore,

Dundalk,

Co. Louth.

A91 D439

Contact: Michael James Murphy

Phone: +353 (0)42 937 3554

+353 (0)42 937 3283

Email: [lampost@iol.ie](mailto:lampost@iol.ie)

Web: [www.lampost.ie](http://www.lampost.ie)

### **Piltown Engineering**

*(5m & 6m columns only)*

Piltown Engineering,

Quarrylands,

Fiddown,

Co. Kilkenny.

Phone: +353 (0)51 643 131

Email: [sales@piltownengineering.ie](mailto:sales@piltownengineering.ie)

Web: [www.piltownengineering.ie](http://www.piltownengineering.ie)

**Stainton Exterior Lighting Columns**

Street & Park Equipment Co Ltd.,

P.O. Box 2134,

Swords,

Co. Dublin.

Contact: Colm Carton

Phone: +353 (0)1 8400 633

+353 (0)86 2600 757

+353 (0)86 8120 272

Email: [info@streetandpark.com](mailto:info@streetandpark.com)

Web: [www.streetandpark.com](http://www.streetandpark.com)

**IPL Group**

Aluminium Columns & Passively Safe Columns

Slane Road,

Drogheda,

Co. Louth,

Ireland

Contact Thomas McDonald

Phone +353 (0)87 960 0538

+353 (0)41 983 2591

Email: [thomas@ipl.ie](mailto:thomas@ipl.ie)

[info@ipl.ie](mailto:info@ipl.ie)

Web: [www.iplgroup.com](http://www.iplgroup.com)

**Appendix 3 - Approved Exterior Lighting Contractors**

The below contractor Electric Skyline are approved for ESB network mounted lighting inventory upgrades.

**Electric Skyline Limited.**

Unit 8/9 Sarsfield Court Industrial Estate,  
Glanmire  
Cork

Contact: Helder Pacheco  
Phone: +353 (0)87 3485 977  
+353 (0)94 9360 954  
Email: [hpacheco@electricsskyline.ie](mailto:hpacheco@electricsskyline.ie)  
Web: [www.electricskyline.ie](http://www.electricskyline.ie)

**ESB Networks**

Sarsfield Road,  
Wilton,  
Cork City,  
T12 E367

Contact: Tom Power  
Phone: Emergencies 1850 372 999  
Enquiries: 1850 372 757  
Email: [esbnetworks@esb.ie](mailto:esbnetworks@esb.ie)  
Service locations: [centralsiterequests@esb.ie](mailto:centralsiterequests@esb.ie)

#### Appendix 4 – Sample List of Approved Suppliers & Associated Fittings

New exterior lighting schemes previously implemented by Cork City Council have included the following fittings, manufacturers and equipment supplied to Cork City Council. This is to be used as a reference to the standard of fitting Cork City Council will accept in any new installation.

Manufacturer	Lantern family	Supplier
CU Phosco	P851, P852, P862	CU Lighting Ltd.
Holophane	S-Line, V-Max	EAD Ltd.
Orangetek	Arialed	Orangetek Ltd.
Philips	Luma, Lumistreet	Philips Ireland Ltd.
Swarco	Head 5	Elmore Group Ltd.
Thorn	CiviTEQ, R2L2	ZG Lighting Ltd.
Urbis Schredar	Axia	Urbis Schredar Ltd
Cree Lighting	XSP, Uno Energy	Cree Lighting

LED lanterns from other manufacturers **will be considered** by Cork City Council if they meet certain requirements.

**Lighting Designers, Consultants & Developers** shall complete the LED lantern approval form ([Appendix 4.1](#)) and submit to the Public Lighting Office for their approval of use before any detailed design is undertaken.



## Appendix 4.1 – LED Lantern Approval Form

Selection Questions	Minimum Standard for Luminaire to Meet	Luminaire Type No. _____
Luminaire Manufacturer, Make & Model:	Refer to Appendix 4 or Equal and Approved	
LED Module Manufacturer, Make & Model		
LED Driver Manufacturer, Make & Model		
Luminaire Warranty	Min 10 years	
Luminaire housing type	Aluminium LM6	
Luminaire Colour Temperature	Refer to 4.4.2	
Luminaire Design Life	Min 25 years	
Rated Life of the LED Driver	Min 10 years	
Are luminaires CE Marked (Yes / No)	Yes	
Luminaire Weight (kg)	Max 10kg	
Rated Lumen Output of the Luminaire	-	
Rated Voltage	230V ± 10%	
Luminaire Power Factor	Min 0.92	
Maximum Driver Current (mA)	1050mA	
Proposed Upper Limit Driver Working Current as % of max (mA)	75%	
Are luminaires fitted with surge protection to 10kA/10kV (Yes / No)	to EN 61643-11:2012+A11:2018	
Ambient Temperature Range (Ta) luminaire is designed to operate in	Min -15°C - +30°C	
Upward Light Output Ratio (ULOR)	Max 0%	
Disability Glare Class (G Class)	At least G1	
Constant Light Output (CLO) Total Circuit Watts of complete luminaire (LEDs & Driver), CLO at minimum 90% of initial lumen output for 100.000hr, i.e. L80 B10	L80 B10	
Maximum Windage of luminaire	≤6M 0.15m <sup>2</sup>	
	≤8M 0.17m <sup>2</sup>	
	≤10M 0.22m <sup>2</sup>	
Colour Rendering Index (CRI)	Ra ≥ 70	

LED Colour Stability (Bin Class)	Max 5-Step Ellipse	
Luminaire efficacy (lm/W) of the complete luminaire at 100% of initial lumen output	Min 120lm/W	
What material is the Cover for the LED Modules made from?	Glass	
CMS Enabled (Yes/No) (Central Management System)	Yes	
Photocell Manufacturer, Make & Model	Westire 8480 or Equal and Approved by CCC	
Details of Electronic Photocell used Please state which of the following is proposed:	7-pin NEMA socket with electronic photocell	<input type="checkbox"/>
	Mini-Photocell with same functionality as 7-pin NEMA Socket	<input type="checkbox"/>
	Other, please specify	
IP Rating of complete luminaire	Min IP65	
Impact Resistant Rating of the luminaire (body & optic)	Min IK08	
Spigot Size for post top entry and side entry	Post Top - 60-76mm Side Entry - 32-42mm	

## Appendix 4.2 - Public Lighting Column Approval Form

Selection Questions	Minimum Standard for Luminaire to Meet	Column Type No. _____
Public Lighting Column Type	Decorative, Tubular, tapered tubular or tapered hexagonal/octagonal/hexadecagon	
Public Lighting Column height	5m - 12m	
Compliant to BS EN 40 family of standards (Yes / No)	Yes	
Bracket Type	Post top Other, please specify	
Public Lighting Column Design Life	Min 25 years	
CE Certified (Yes / No)	Yes	
Access Chamber adjacent to PL column (Yes / No)	Yes, Refer to section 7	
Finish to outside of column	Powder coated, Steel, Aluminum, RAL 9007 colour etc.	
Warranty	10 Years	
Root and Flanged		
Hinged or not		

**Appendix 5 – Electrical Pre-Qualification Panel**

Cork City Council, Public Lighting Office Electrical Pre-Qualification Panel

- Please contact the Public Lighting Office, Cork City Council for an up to date panel list.

## Appendix 6 – Available Dimming Profiles

The UMR (unmetered registry) has changed the references on dimming profiles/burn profiles to the new references as outlined in the table below.

When Consultants and Developer are applying for a new connection it is important to include the actual dimming profile selected for the chosen luminaire and not just to state D2D on the application form. This will ensure the burn hour

U10 - Public Lighting Profile 10 – 24Hr

U11 - Public Lighting Profile 11 – Dusk / Dawn

U12 Public Lighting Profile 12 – Dusk / Midnight

U13 Public Lighting Profile 13 – Dusk / Dawn with Extra Trimming

U14A Public Lighting Profile 14 - Hours not dimmed

U14B Public Lighting Profile 14 – Hours dimmed to 75% between midnight and 06.00

U15A Public Lighting Profile 15 - Hours not dimmed

U15B Public Lighting Profile 15 – Hours dimmed to 67% between midnight and 06.00

U16A Public Lighting Profile 16 - Hours not dimmed

U16B Public Lighting Profile 16 – Hours dimmed to 50% between midnight and 06.00

U17A Public Lighting Profile 17 - Hours not dimmed

U17B Public Lighting Profile 17 - dimmed to 75% from 21:00 through to 07:00 next day

U18A Public Lighting Profile 18 - Hours not dimmed

U18B Public Lighting Profile 18 - dimmed to 67% from 21:00 through to 07:00 next day

U19A Public Lighting Profile 19 - Dusk to Dawn with Extra Trimming Hours not dimmed

U19B Public Lighting Profile 19 dimmed to 50% from 21:00 through to 07:00 next day

U20A Public Lighting Profile 20 - Hours not dimmed

U20B Public Lighting Profile 20 – Hours dimmed to 75% from 20:00 to 22:00

U20C Public Lighting Profile 20 – Hours dimmed to 50% from 22:00 to 50% until 07:00 next day

U21A Public Lighting Profile 21 - Hours not dimmed

U21B Public Lighting Profile 21 – Hours dimmed to 67% from 20:00 to 22:00

U21C Public Lighting Profile 21 – Hours dimmed to 50% from 22:00 until 07:00 next day

U22A Public Lighting Profile 22 - Hours not dimmed

U22B Public Lighting Profile 22 – Hours dimmed to 64% from 20:00 to 22:00

U22C Public Lighting Profile 22 – Hours dimmed to 47% from 22:00 until 07:00 next day

U23A Public Lighting - Hours not dimmed

U23B Public Lighting – Hours dimmed to 64% from 20:00 to 22:00

U23C Public Lighting – Hours dimmed to 36% from 22:00 until 07:00 next day

## Appendix 7 – Public Lighting Interface Unit

## Distribution Pole Isolation Box (Interface Unit)



Dimensions	Height	320mm
(Minimum working envelope):	Width	220mm
	Depth	120mm

## Equipment shown:

ESB Networks Single Phase Cut Out

Customer Single Phase Isolator

(10kV/kA Single Phase Surge Protection also required by Cork City Council)

See page IX section 4(b) of the ESB national code of practices (4<sup>th</sup> Edition) for requirements in relation to protection against corrosion.

- Warning label “Live electricity” required on doors.
- 8mm triangular locks required on doors.
- Fire retardant back plate.
- Enclosure should have no sharp edges
- Suitable for Wall/Pole mounting
- N.B. Outside enclosures used for housing ESB Networks’ equipment must
- be either non-metallic, stainless steel or hot dip galvanised and have a Minimum IP44 rating. See specific requirements 4 (b) page IX of the ESB national code of practices (4th Edition)



**Appendix 8 – ESB and Customer Pillars**

Unmetered Pillar



ESB Networks Equipment      Customer Equipment



ESB Networks Equipment      Customer Equipment

**Single Phase Unmetered Supply**

**Three Phase Unmetered Supply**

Minimum Dimensions

Height - 600mm  
Width - 300mm  
Depth - 150mm

Height - 660mm  
Width - 370mm  
Depth - 125mm

Root depth

320mm

360mm

Minimum opening size

Height - 510mm  
Width - 250mm

Height - 480mm  
Width - 330mm

Space requirements

ESB Networks:  
125mm wide **LHS**  
Customer:  
125mm wide **RHS**

ESB Networks:  
230mm wide **LHS**  
Customer:  
140mm wide **RHS**

Equipment includes:

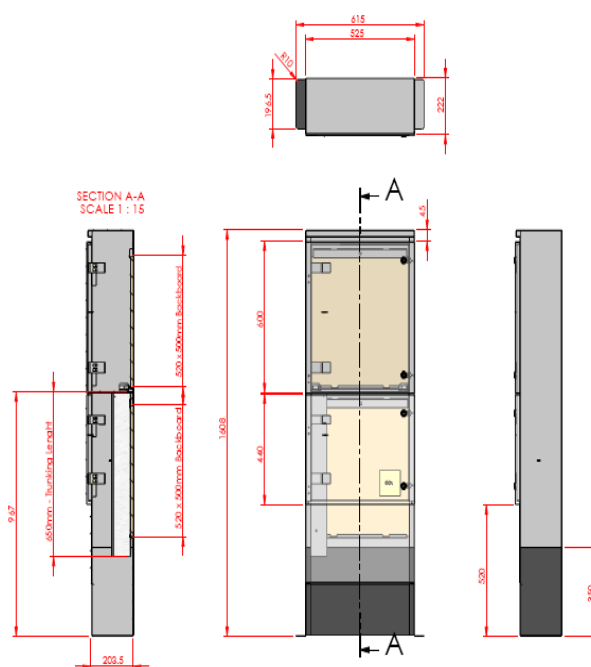
- ESB Networks Single Phase Cut Out
- ESB Networks Single Phase Isolator

- Warning label “Live electricity” required on doors.
- Pillar body should be vented
- 8mm triangular locks required on doors.
- Fire retardant back plate.
- Enclosure should have no sharp edges.





Metered Pillar



**Single Phase**

Unmetered Supply

Minimum Dimensions

Height - 1250mm  
Width - 500mm  
Depth - 225mm

Root depth

350mm

Minimum opening size

Height - 600mm  
Width - 465mm  
Depth - 225mm

**Three Phase**

Unmetered Supply

Height - 1250mm  
Width - 500mm  
Depth - 225mm

350mm

Height - 600mm  
Width - 465mm  
Depth - 225mm

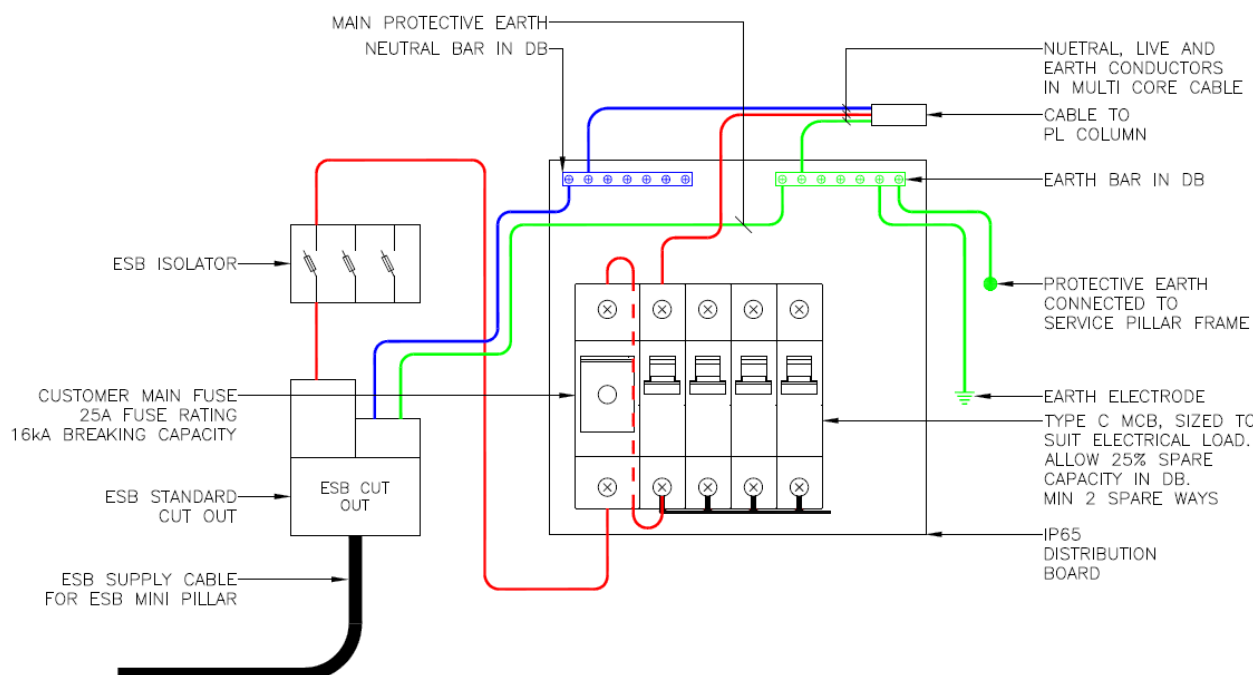
**Note:** Vertically hinged door for access to ESB Networks equipment.

**Note:** Outside enclosures used for housing ESB Networks' equipment must be either non-metallic, stainless steel or hot dipped galvanised and have a minimum IP44 rating.

See specific requirements 4 (b) page IX of the ESB national code of practices (4th Edition)

- Warning label "Live electricity" required on doors.
- 8mm triangular locks required on hinged doors.
- Fire retardant back plate.
- Enclosure should have no sharp edges.
- Gland plate must be fitted to prevent moisture ingress and allow for minimum dimensions for ESB Networks equipment
- Trunking to enclose Networks cables required
- Approved sealant must be installed in base of pillar.



Typical Customer Service Pillar Wiring Diagram

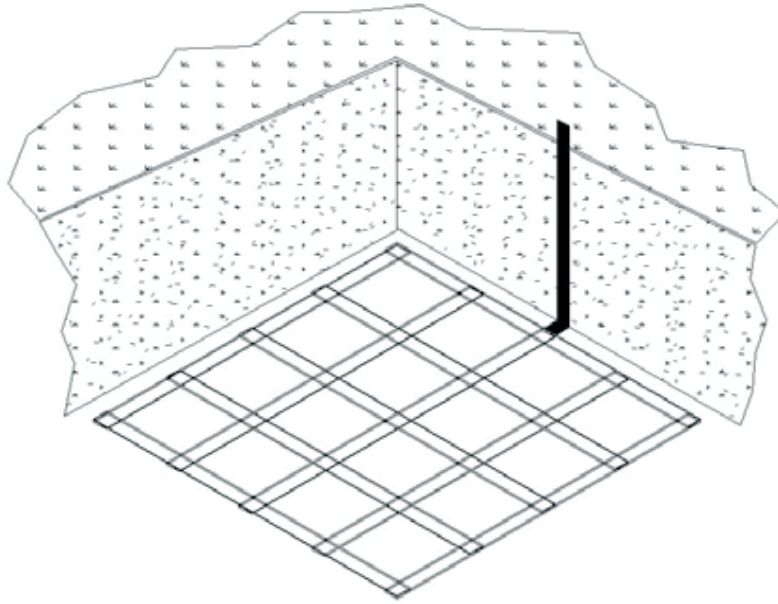
**There should be a separation of at least 2 metres between the ESB Networks mini pillar and the customer's service pillar.**

The purpose of this requirement is to avoid conflict and ensure segregation between the ESB Networks cable vault / ducts and the public lighting ducting e.g., the public lighting circuits cannot pass through the mini pillar cable vault.

Note: This distance may be reduced if segregation is ensured. In this situation the mini pillar and customer's service pillar must be cross bonded. Confirmation to be sought from ESB regarding this method.

In all cases NSAI National Rules of Electrical Installation will apply. Circuits shown are for example only and site conditions may differ.

Appendix 9 – Earthing Lattice



*Fig 1 Earthing Copper lattice installation with Strap*




*Fig 2 Earthing copper lattice*

Appendix 10 – ESB NC4 Application Form

Link to ESB NC4 Form for unmetered connections

esbnetworks.ie



## FORM NC4 (INC. PUBLIC LIGHTING)

### APPLICATION FOR UNMETERED CONNECTIONS

ESB Networks DAC requires the information requested on this application form to enable us to set up and manage your electricity supply connection. As the Distribution System Operator, this information is also required to enable ESB Networks DAC to manage the electricity network. The data controller is ESB Networks DAC. Please refer to our privacy policy at <https://esbnetworks.ie/privacy>

**Please fill in ALL sections in BLOCK CAPITALS**  
**Do not leave any section blank; N/A to be used if it doesn't apply.**

FOR OFFICIAL USE ONLY  
 NOTIFICATION NO: \_\_\_\_\_

**1. APPLICANTS FULL NAME AND FULL SITE ADDRESS WHERE THE CONNECTION POINTS ARE TO BE PROVIDED.**  
**(If a company /partnership/Local Authority give full COMPANY OR TRADING NAME). Please note if applying on behalf of a client (in the case of consultants) a letter of authorisation is required**

Title: Mr  Mrs  Ms  Company / Other \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Mobile number: \_\_\_\_\_ Landline: \_\_\_\_\_

Email: \_\_\_\_\_

**2. BILLING ADDRESS OF REGISTERED COMPANY**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**3. CONTACT NAME & ADDRESS FOR CORRESPONDENCE (If different from section 1)**

Title: Mr  Mrs  Ms  Company / Other \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Mobile number: \_\_\_\_\_ Landline: \_\_\_\_\_

Email: \_\_\_\_\_

**4. EXISTING CUSTOMERS ONLY**

If applicable, please provide the GMPRN you wish to add the connection points to. \_\_\_\_\_

**5. SITE PLAN & LOCATION OF CONNECTION POINTS.**

Please attach an Ordinance Survey map(scale 1:2500-1:10560) showing the location of your site and a site plan(scale1:100-1:500) showing the location of the connection points.  
**Please note that we will not be able to process your application without these maps.**

**6. ELECTRICITY SUPPLIER**


Following the receipt and payment of quotation, you should also register with an Electricity Supplier.  
**A list of electricity suppliers is available on CRU.ie**







**Appendix 12 – Taking in Charge Form**

	<b>Comhairle Cathrach Chorcaí</b>	<b>Cork City Council</b>
	<b>Exterior Lighting Taking in Charge Form</b>	
	This form must be submitted to the Public Lighting Office, Cork City. Council prior to an estates exterior lighting being taken in charge.	
Date of Application		
Planning Ref. Number:		
Development Details		
Name:		
Address:		

Developer Details	
Name:	
Address:	
Tel. No.:	
Email:	

Civil Contractor Details	
Name:	
Address:	
Tel. No.:	
Email:	

Electrical Contractor Details	
Name:	
Address:	
Tel. No.:	
Email:	

Date of Installation of Exterior Lighting		
Type of Installation (tick applicable)	New <input type="radio"/>	Alteration <input type="radio"/>
Quantity of Exterior Lights to be taken in charge	Column Mounted	
	ESB Network Pole Mounted	
	Wall Mounted	

Lantern Details	
Manufacturer	
Model Name and Reference	
Lamp Type (LED, SON etc.)	
Wattage	
Ballast Type (Electronic, Magnetic etc.)	
Driver Current (mA)	

Column Details	
Manufacturer	
Type (Octagonal, tubular Multi sided etc.)	
Height	
Bracket (Y/N)	
Bracket Outreach Length	

Energy Supply Details	
MPRN	
Current Energy Supplier	
Supply Point (Metered, Unmetered Micro Pillar etc.)	

Meter Details (if applicable)	
MIC	
Phases	
DUoS	



Electrical Details	
Protective Device Rating	
Cable Size (Pillar to Column)	
ETCI Form No.	
Certifying Electrician	
Min Insulation Resistance	
Max Resistance of Protective Conductor	
Max Fault Loop Impedance	
























Please ensure that all Planning issues have been addressed prior to submitting this form. The following items, including this form, must be submitted in order to complete this application for Exterior Lighting taking in charge; (tick appropriate box)

- 1 A paper and a digital copy (in .dwg or .dxf format) of an as-built drawing of the development detailing the column positions, column numbers, power supply locations and exterior lighting circuits.  
 Paper:   
 Digital:
- 2  A copy of the Exterior Lighting design, showing that the installed scheme meets the required standards for Exterior Lighting as in BS 5489 & EN 13201.
- 3  A copy of the latest energy bill for the Exterior Lighting (in the last two months) showing that payment has been completed up to date of application for taking in charge.
- 4  A completed electrical test certificate for the Exterior Lighting installation.

Submit completed taking in charge forms to:

Exterior Lighting Taking in Charge,  
 Public Lighting Office,  
 Cork City Council,  
 City Hall,  
 Cork

### Appendix 13 – IP and IK Ratings

FIRST DIGIT Protection against solid objects		SECOND DIGIT Protection against liquids		IK CODE Protection against mechanical impacts	
IP	TEST	IP	TEST	IK	TEST
0	 no protection	0	 no protection	00	 no protection
1	 protected against solid objects up to 50 mm e.g. to 50 mm e.g. hands	1	 protected against vertically falling drops of water	01-05	 impact < 1 joule
2	 protected against solid objects up to 12 mm e.g. fingers	2	 protected against direct sprays of water up to 15° from the vertical	06	 impact 1 joule
3	 protected against solid objects over 2,5 mm (tools+ small wires)	3	 protected against water sprayed from all directions - limited ingress permitted	07	 impact 2 joule
4	 protected against solid objects over 1 mm (tools+ small wires)	4	 protected against water sprayed from all directions - limited ingress permitted	08	 impact 5 joule
5	 protected against dust - limited ingress permitted (no harmful deposit)	5	 protected against low pressure jets of water from all directions - limited ingress permitted	09	 impact 10 joule
6	 totally protected against dust	6	 protected against strong jets of water e.g. for use on ships/decks - limited ingress permitted	10	 impact 20 joule
		7	 protected against the effects of immersion between 15 cm and 1 m		
		8	 protected against long periods of immersion under pressure		

Copyright Fibox Oy Ab

The first numeral outlines the protection of persons against contact with or approach to live parts and against contact with moving parts, other than smooth rotating shafts and the like, inside the enclosure and protection of the equipment against ingress of solid foreign bodies in accordance with IEC 60598-1:2003

The first numeral outlines the protection indicates the degree of protection against the ingress moisture as defined in IEC 60598-1:2003. Please refer to table on the next page for the breakdown of protection afforded by the corresponding numeral

## Ingress Protection Table

IP	Level of Protection	IP	Level of Protection
0	no protection	0	no protection
1	Protected against solid objects 50 mm in diameter or greater. A large surface of the body, such as a hand (no protection against deliberate access).	1	Protected against dripping water. Dripping water (vertically falling drops) shall have no harmful effect.
2	Protected against solid objects 12 mm in diameter or greater. Fingers or similar objects not exceeding 80mm in length.	2	Protected against dripping water when tilted up to 15° Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position
3	Protected against solid objects 2.5 mm in diameter or greater. Tools, wires, etc., of diameter or thickness greater than 2.5 mm.	3	Protected against spraying water. Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Protected against solid objects 1mm in diameter or greater. Wires or other similar solid material of thickness greater than 1mm in diameter.	4	Protected against splashing water. Water splashing against the enclosure from any direction shall have no harmful effect.
5	Dust protected. Dust does not enter in sufficient quantity to interfere with satisfactory operation of equipment.	5	Protected against water jets. Water projected by a nozzle against enclosure from any direction shall have no harmful effects.
6	Dust tight. No ingress of dust	6	Protected against heavy seas. Water from heavy seas or projected in powerful water jets shall not enter the enclosure in harmful quantities.
		7	Protected against the effects of temporary immersion. Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time.
		8	Protected against continuous immersion. The equipment is suitable for continuous submersion in water under conditions which shall be specified by the manufacturer.

## Impact Protection Table

IK Rating	Level of Protection
IK00	Not protected
IK01	Protected against 0.14 joules impact. Equivalent to impact of 0.25 kg mass dropped from 56 mm above impacted surface.
IK02	Protected against 0.2 joules impact. Equivalent to impact of 0.25 kg mass dropped from 80 mm above impacted surface.
IK03	Protected against 0.35 joules impact. Equivalent to impact of 0.25 kg mass dropped from 140 mm above impacted surface.
IK04	Protected against 0.5 joules impact. Equivalent to impact of 0.25 kg mass dropped from 200 mm above impacted surface.
IK05	Protected against 0.7 joules impact. Equivalent to impact of 0.25 kg mass dropped from 280 mm above impacted surface.
IK06	Protected against 1 joules impact. Equivalent to impact of 0.25 kg mass dropped from 400 mm above impacted surface.
IK07	Protected against 2 joules impact. Equivalent to impact of 0.5 kg mass dropped from 400 mm above impacted surface.
IK08	Protected against 5 joules impact. Equivalent to impact of 1.7 kg mass dropped from 300 mm above impacted surface
IK09	Protected against 10 joules impact. Equivalent to impact of 5 kg mass dropped from 200 mm above impacted surface.
IK10	Protected against 20 joules impact. Equivalent to impact of 5 kg mass dropped from 400 mm above impacted surface.

## Appendix 14 – Colour Code for Buried Plastic Pipe



1 Swift Square, Northwood,  
Santry, Dublin 9 D09 A0E4, Ireland  
Email: info@nsai.ie  
www.nsai.ie / www.standards.ie

### Summary of colour code for buried plastic piping

(see Irish Standard 370:2016 – Colour code for buried plastic piping).

**WARNING:** This code applies to new installations. All users should be aware that a high proportion of existing underground services are in ducts and pipes which do not conform to the colour requirements set out in I.S. 370:2016.



**Public lighting**  
(and control cables operating at 125 volts and above)



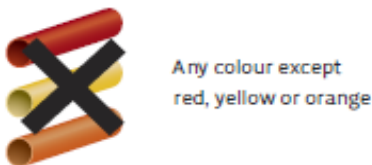
**Storm and Road drain**  
(Smooth external wall duct, corrugated)



**Telecom/Fibre optic**  
(smooth external wall duct)



**Telecom/Fibre optic**  
(corrugated duct only – maximum pipe outside diameter 175 mm)



**Street furniture**  
(signal below 125 volt)



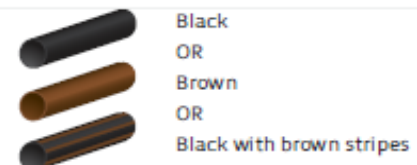
**Gas**



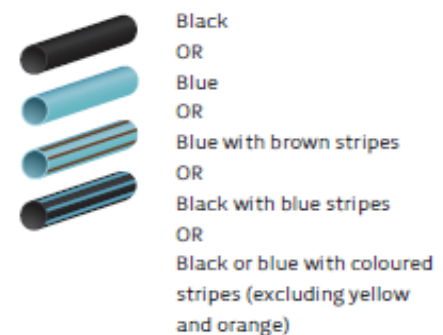
**Electricity**



**Sewer**



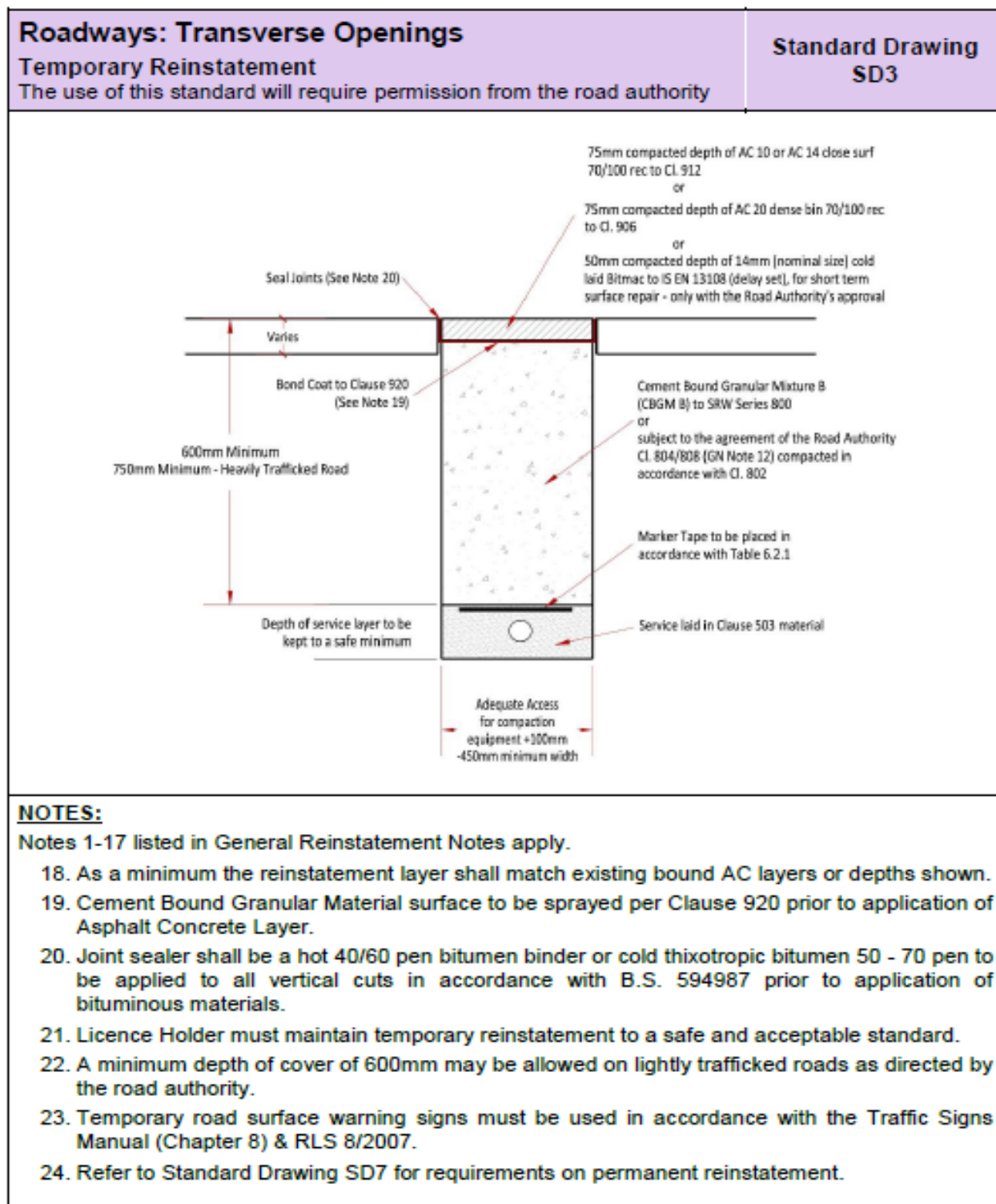
**Potable water**





## Appendix 15 – Trench Reinstatement Details (The Purple Book)

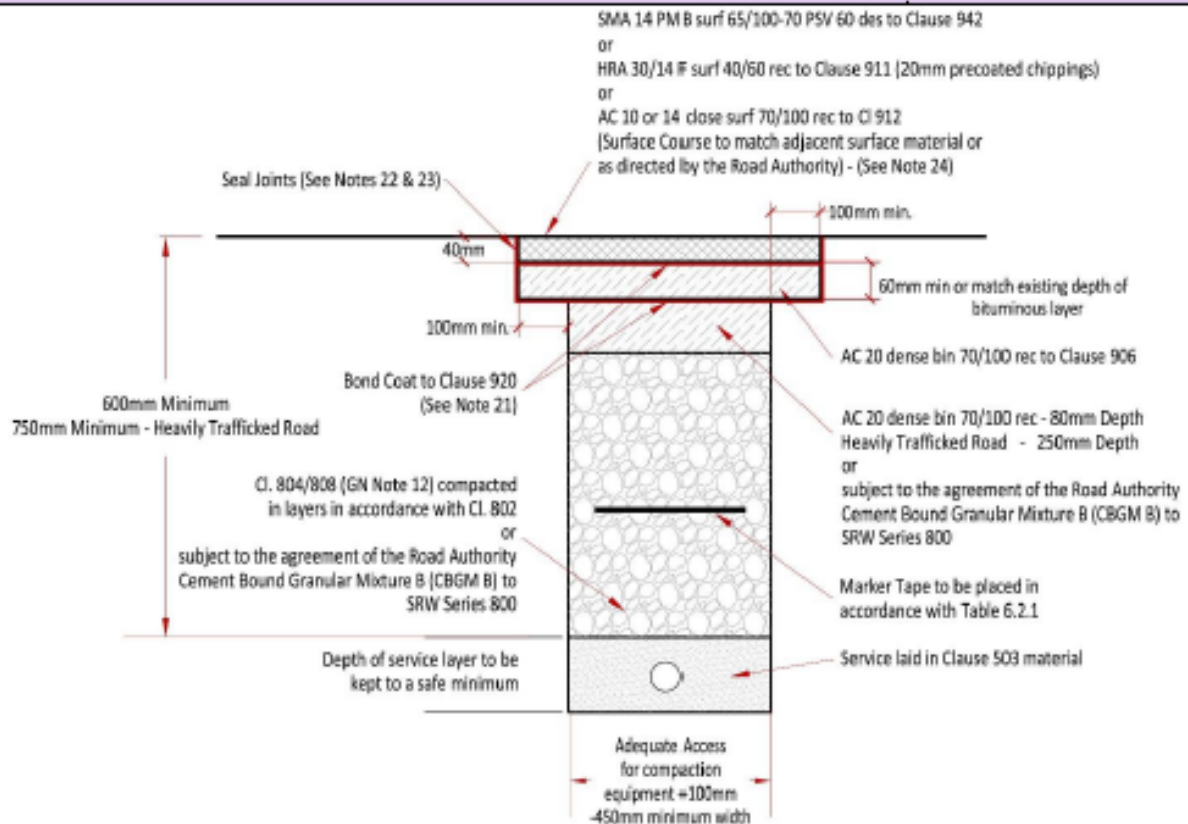
The below outline the required reinstatement details for any trench relating to public lighting ducting and associated equipment. These details are taken from the Guidelines for Managing Openings in Public Roads book also known as “The Purple Book”. The following images details finishes required in a number of different surfaces such as tarmac, concrete and grass.



**Roadways: Longitudinal Openings****Permanent Reinstatement**

Excluding openings in rural unbound roadways with surface dressing

Excluding openings at heavy duty locations

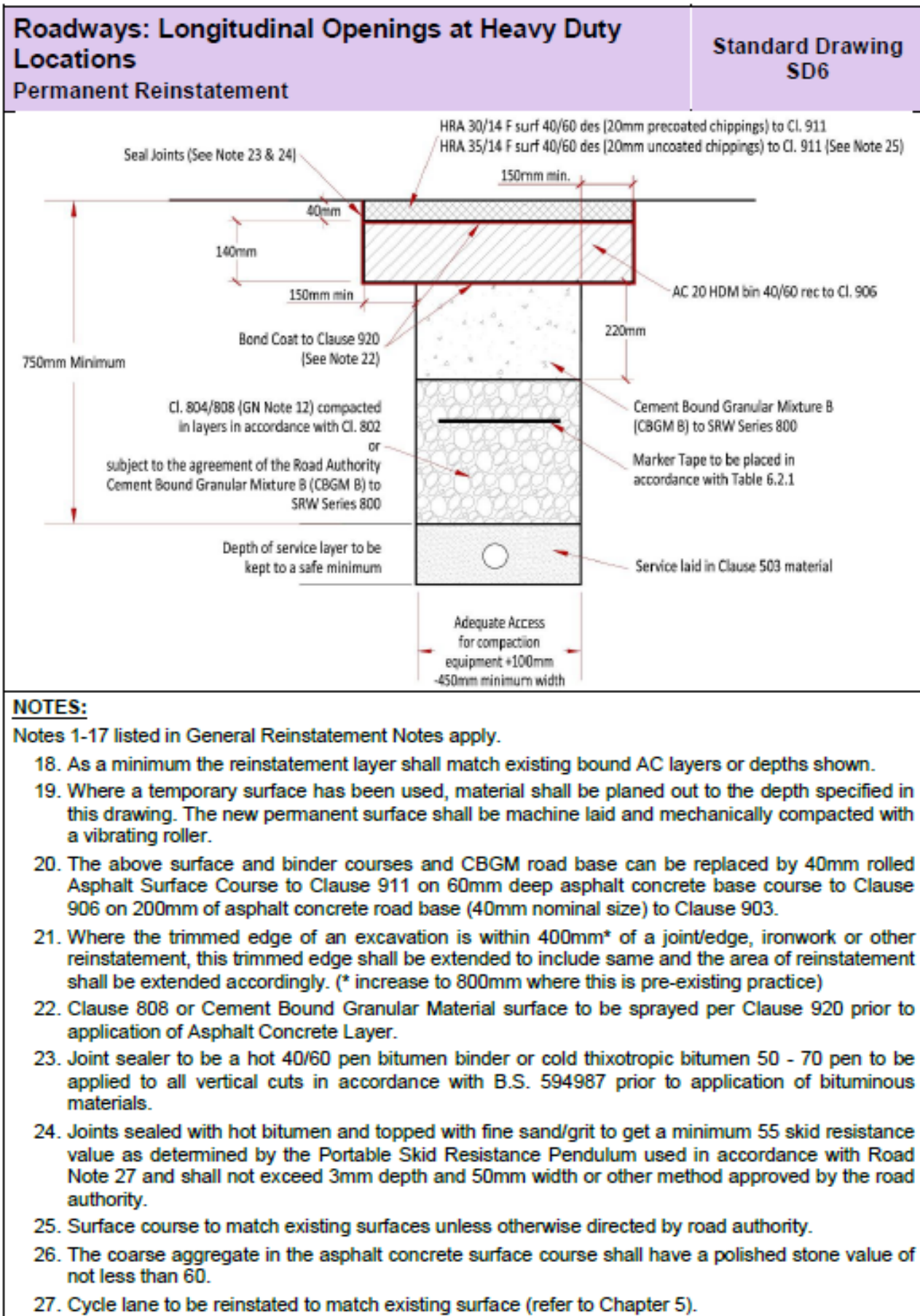
**Standard Drawing  
SD4****NOTES:**

Notes 1-17 listed in General Reinstatement Notes apply.

18. As a minimum the reinstatement layer shall match existing bound AC layers or depths shown.
19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
20. Where the trimmed edge of an excavation is within 400mm\* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (\* increase to 800mm where this is pre-existing practice)
21. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
22. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
23. Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
24. Surface course to match existing surfaces unless otherwise directed by road authority.
25. The coarse aggregate in the asphalt concrete surface course shall have a polished stone value of not less than 60.
26. A minimum depth of cover of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.
27. Cycle lane to be reinstated to match existing surface (refer to Chapter 5).

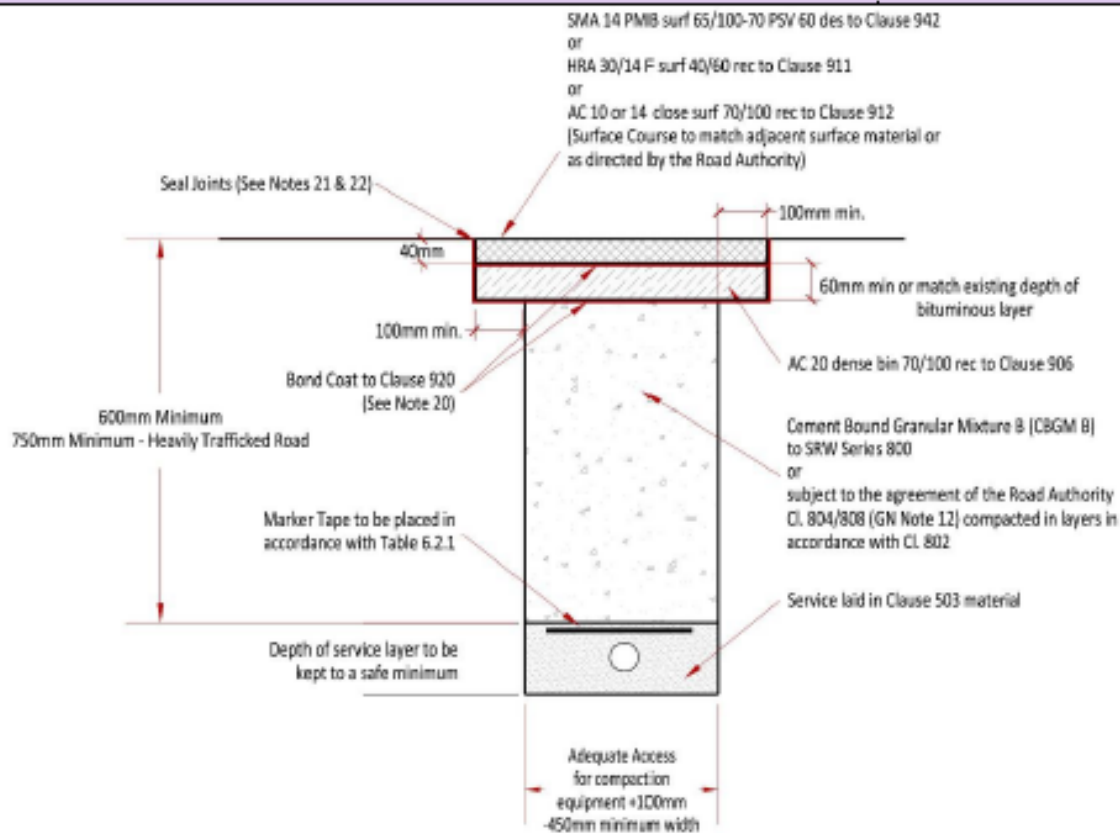






## Roadways: Transverse Openings Permanent Reinstatement

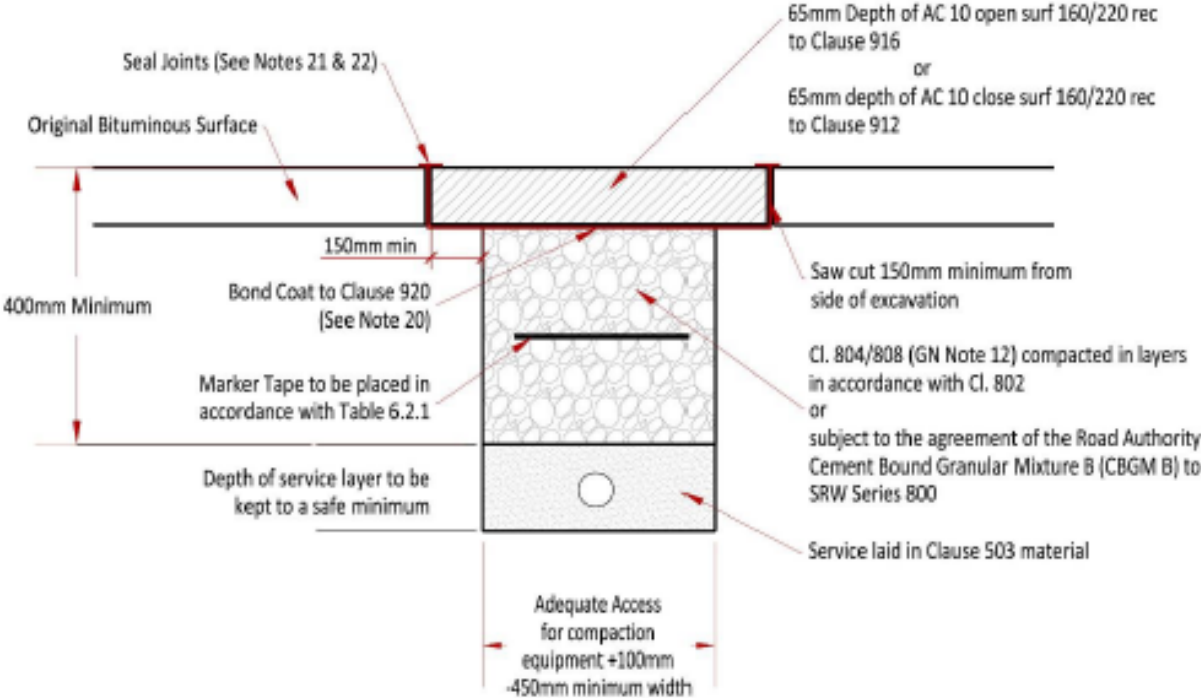
Standard Drawing  
SD7



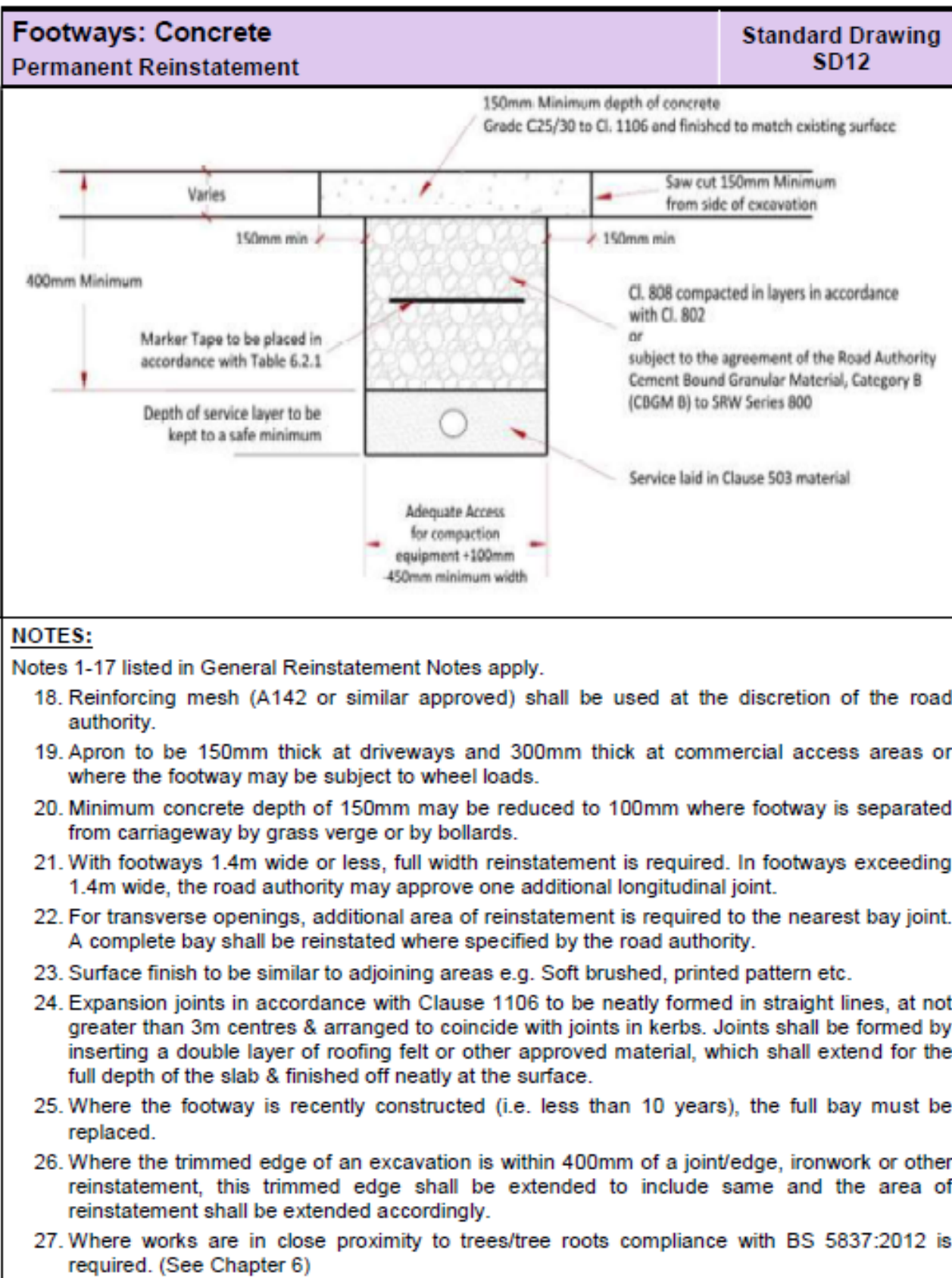
### NOTES:

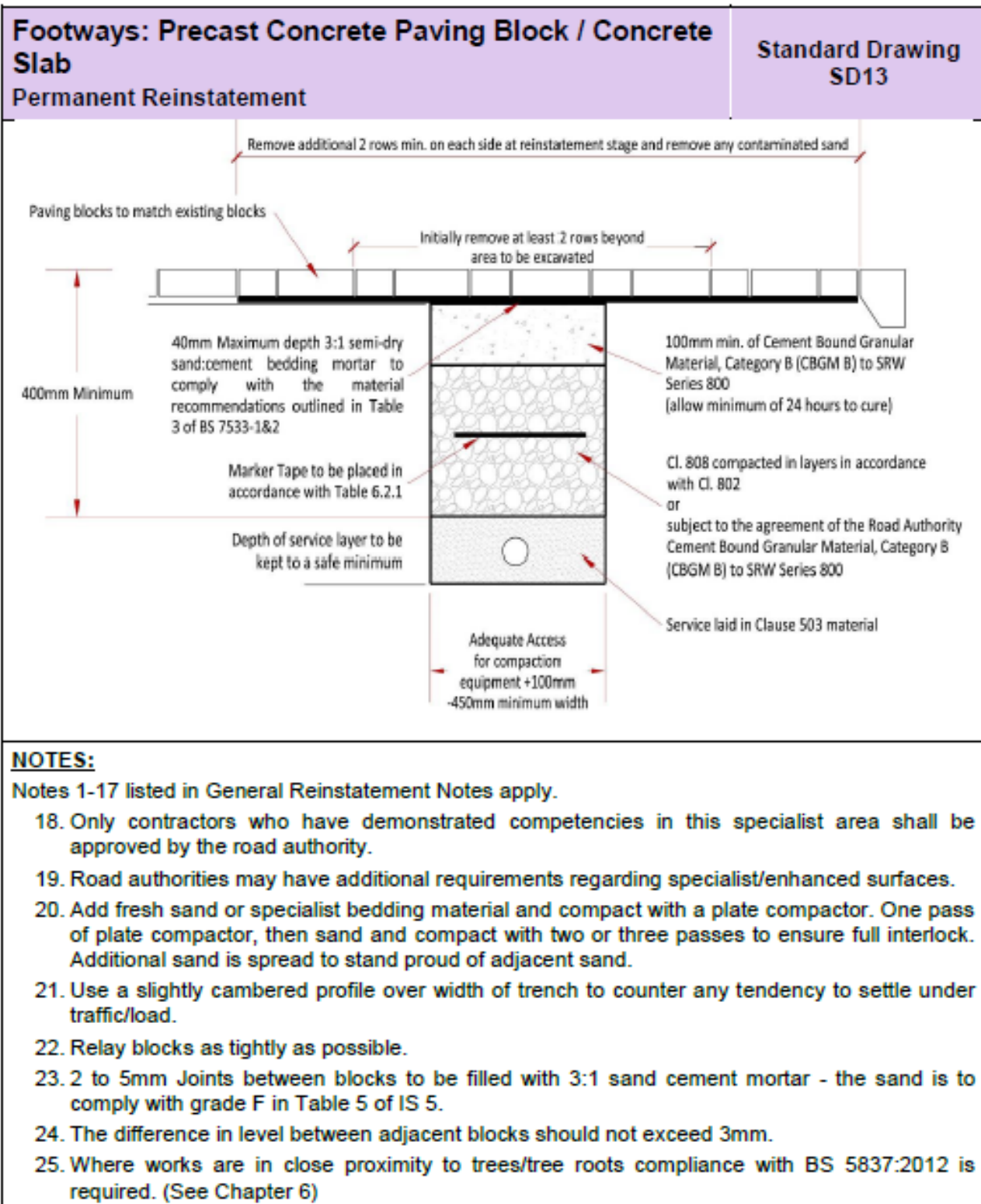
Notes 1-17 listed in General Reinstatement Notes apply.

18. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.
19. Where the trimmed edge of an excavation is within 400mm\* of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly. (\* increase to 800mm where this is pre-existing practice)
20. Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.
21. Joint sealer to be a hot 40/60 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.
22. Joints sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width or other method approved by the road authority.
23. The coarse aggregate in the surface course Asphalt Concrete shall have a polished stone value of not less than 60.
24. A minimum depth of cover of 600mm shall be allowed on lightly trafficked roads as directed by the road authority.
25. Surface course to match existing surfaces unless otherwise directed by road authority.

Footways: Asphalt Concrete (Bituminous Macadam) Permanent Reinstatement	Standard Drawing SD11
 <p>The diagram illustrates the cross-section of a footway reinstatement. It shows the original bituminous surface being replaced by a new asphalt concrete surface. Key features include seal joints, a 65mm depth of AC 10 open surf, a bond coat, a marker tape, and a compacted layer of CI. 804/808. The service layer is laid in Clause 503 material. Dimensions specify a 150mm minimum saw cut from the side of the excavation, a 400mm minimum depth, and adequate access for compaction equipment (+100mm, -450mm minimum width).</p>	
<p><b>NOTES:</b></p> <p>Notes 1-17 listed in General Reinstatement Notes apply.</p> <ol style="list-style-type: none"> <li>18. All edges to be saw cut a minimum of 150mm from sides of excavation.</li> <li>19. Where a temporary surface has been used, material shall be planed out to the depth specified in this drawing. The new permanent surface shall be machine laid and mechanically compacted with a vibrating roller.</li> <li>20. Clause 808 or Cement Bound Granular Material surface to be sprayed per Clause 920 prior to application of Asphalt Concrete Layer.</li> <li>21. Joint sealer shall be a hot 50 pen bitumen binder or cold thixotropic bitumen 50 - 70 pen to be applied to all vertical cuts in accordance with B.S. 594987 prior to application of bituminous materials.</li> <li>22. Joints to be sealed with hot bitumen and topped with fine sand/grit to get a minimum 55 skid resistance value, as determined by the Portable Skid Resistance Pendulum used in accordance with Road Note 27 and shall not exceed 3mm depth and 50mm width.</li> <li>23. For vehicular accesses the Asphalt Concrete surface shall be 100mm thick. Where the footway may be subject to heavy loads the asphalt concrete shall be to a depth of 150mm similar to roadway.</li> <li>24. Accesses to commercial premises require standards detailed in Standard Drawing SD4.</li> <li>25. Where the trimmed edge of an excavation is within 400mm of a joint/edge, ironwork or other reinstatement, this trimmed edge shall be extended to include same and the area of reinstatement shall be extended accordingly.</li> <li>26. With footways 1.4m wide or less, full width reinstatement is required. In footways exceeding 1.4m wide, the road authority may approve one additional longitudinal joint.</li> <li>27. Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)</li> </ol>	





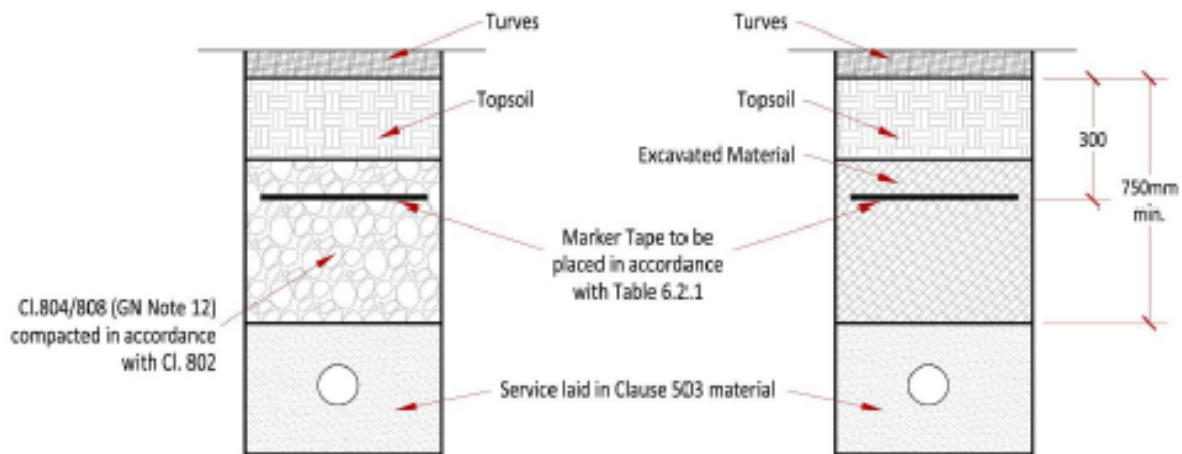


## Grass Verges, Medians, Fields and Lawns Permanent Reinstatement

Standard Drawing  
SD14

To apply when nearest point of trench is within one metre of paved edge of a national or regional road or in the median of a dual carriageway or motorway or within 0.5 metres of paved edge of a local road. In addition, the compacted Clause 808 material shall extend to the road edge.

To apply when nearest point of trench is over one metre from paved edge of a national or regional road or over 0.5 metres from paved edge of a local road.



TRENCH DETAIL IN GRASS MARGINS

### NOTES:

Notes 1-17 listed in General Reinstatement Notes apply.

- 18 Prior to excavation, all grass areas are to be cut into turves which are to be carefully stacked and re-used within one week of cutting during the period 1st April to 31st August or within two weeks of cutting during the remainder of the year. Turves not used within these periods shall be regarded as topsoil. Outside of this period or where turves from grass area are not suitable, imported turves approved by the road authority are to be used.
- 19 Where topsoiling and seeding is permitted by the road authority the following shall apply:
  - a. Prior to seeding or turfing, an approved fertilizer shall be evenly distributed on the topsoil at a rate of not less than 100g per sq. metre
  - b. The areas to be grassed shall be covered with topsoil to a minimum depth of 100mm which shall be reduced to a fine tilth, free from stones and debris with any dimension greater than 35mm. The topsoil shall be graded and lightly compacted to 100mm depth or existing depth - whichever is greater. Any upstanding debris or stones exceeding 25mm dimension shall be removed.
  - c. Pay due regard to the season and weather condition before sowing grass seed. Immediately prior to sowing the grass seed, the topsoil shall be reduced to a fine tilth. Sowing the grass seed shall be carried out by an even distribution, using a blend of (per Hectare) 170kg Manhattan Rye Grass and 13kg Dwarf Clover or other mix as specified by the road authority. For slopes in excess of ten degrees, these quantities shall be increased by 50%. The seed shall be covered by lightly raking into the surface of the topsoil. The area shall be watered every second day.
- 20 All drainage channels shall be marked on the carriageway, mapped and shall be fully restored in conjunction with verge reinstatement to ensure that surface water runoff is discharged from the road surface.
- 21 All temporary reinstatement as detailed above shall be carried out immediately after backfilling the trench. When all settlement has taken place or after a three month period, whichever is the greater, the trench shall be topped up with topsoil to its original level.
- 22 Where works are in close proximity to trees/tree roots compliance with BS 5837:2012 is required. (See Chapter 6)

**Appendix 16 – Reporting Public Lighting Outage**

Cork City Council are responsible for the maintenance of approximately 25,000 public lights across the city. Public lights are important for ensuring road safety at night and enhancing the public realm of the city. Every streetlight is checked for faults during a fortnightly night-time patrol. Standard faults are repaired within 5 working days while nonstandard repairs may take longer.

Should you wish to report a faulty public light you have the following options

- Submit fault online quickly by clicking [THIS LINK](#)
- Call +353 (0)21 2066 400, Mon – Fri 8am to 8pm. Sat 8am to 6pm
- City Council Customer Unit +353 (0)21 492 4000
- Email Fault Details to [traffic@corkcity.ie](mailto:traffic@corkcity.ie)

Information needed to report and log a fault is as follows:



*Types of Asset IDs*



*ESB Network Pole or  
CCC Public lighting Column*

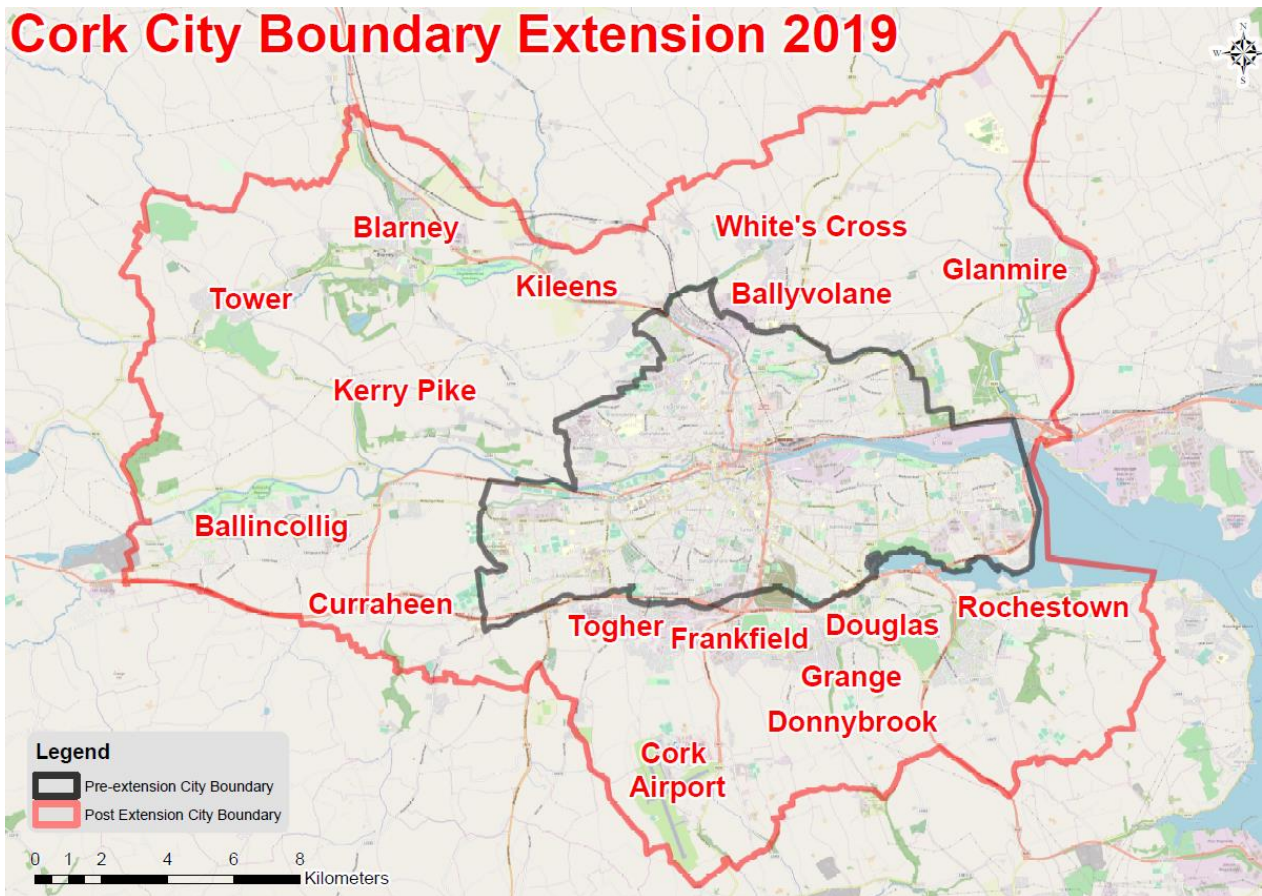
When reporting a fault there are a number of options available to describe the current fault

- Lamp Out
- Daytime Burning of the lamp
- Lamp is flickering
- Shade loose or hanging from the light fitting
- Door missing from the public lighting column

If none of the above apply, then select **other** and give a brief description of the fault which has occurred.



Appendix 17 – Cork City Boundary Map



The latest maps for Cork City and the extended boundary can be obtained from the link below. The above map outlines the new areas that are now within the Cork City Council's Public Lighting network

<https://www.corkcity.ie/en/council-services/public-info/boundary-extension/maps-of-the-new-city/>

