Road Lighting
Contract preparation

TP 501 Instructions for specifiers for TC 501 Electrical Work for Road Lighting and Illuminated Traffic Signs

(formerly)

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This document incorporates specific requirements for the Department for Infrastructure Northern Ireland. Alternative versions of this document are available for other Overseeing Organisations.

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Contents

Latest release notes

Document Code	Version number	Date of publication of relevant change	Changes made to	Type of change
TP 501	NI/ LIVE_2025-02-19	Not available	Core document	Change to policy, major revision, new document development
This document replaces Series NG 1400 Electrical Work for Road Lighting and Traffic Signs				

Previous versions

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Foreword

This document provides specifier instructions for the production of the works specific requirements for TC 501 Electrical Work for Road Lighting and Illuminated Traffic Signs.

This document does not form part of the works specification.

The works specification is made up of both the Specification for Highway Works and the works specific requirements completed by the Specifier.

This document is applicable for contracts throughout the UK, complemented by the additional specification requirements and contractual changes of each Overseeing Organisation.

Users are responsible for applying all appropriate documents applicable to their contract.

Users are responsible for archiving contract documentation in accordance with the user's quality management system.

1. General requirements for electrical work for road lighting and illuminated traffic signs

1.1 This document shall apply to the electrical requirements for road lighting, illuminated traffic signs and illuminated bollards which are intended for permanent exterior installations.

1.2 All electrical installations shall be in accordance with BS 7671 [Ref 24.N].

1.3 The protective earthing of electrical installations shall be in accordance with BS 7430 [Ref 1.N].

1.4 The provider of electricity supplies shall be as stated in TC 501/WSR/001.

SI.1.4 The provider of electricity supplies shall be [enter free text].

1.5 All electrical connections shall be in accordance with TG 411 [Ref 13.N].

1.6 The electrical work for road lighting and illuminated traffic signs shall be as specified in TC 501/WSR/001.

The electrical work for road lighting and illuminated traffic signs		
Drawing / model / document reference	**Drawing / model / document title**	**Drawing / model / document description**
(a)	(b)	(c)

a) Enter a unique reference, to define the unique reference for the drawing / model / document that shows the schematic design of electrical work for road lighting and illuminated traffic signs.

b) Enter text, to define the title of the drawing / model / document that shows the schematic design of electrical work for road lighting and illuminated traffic signs.

c) Enter text, to provide a description of the content of the drawing / model / document that shows the schematic design of electrical work for road lighting and illuminated traffic signs.

Design of electrical work for road lighting and illuminated traffic signs

1.7 The elements of electrical work for road lighting and illuminated traffic signs listed in Table 1.7 shall be Contractor design items, unless otherwise stated in TC 501/WSR/001.

Table 1.7 Contractor design items of electrical work for road lighting and illuminated traffic signs	
Item Number	Item description
1	All aspects of feeder pillars, including sizing and foundations.
2	The type of switch-gear, including cut outs, isolators, fuses and surge protection.
3	Selection of luminaires.

SI.1.7 The requirement for Contractor design of electrical work for road lighting and illuminated traffic signs shall be altered as follows [enter free text].

1.8 The design of electrical work for road lighting and illuminated traffic signs shall be in accordance with TD 501 [Ref 25.N].

1.9 The requirements for "Contractor design" in Section 17 of GC 101 [Ref 15.N] shall apply to electrical work for road lighting and illuminated traffic signs.

Installation requirements for electrical work for road lighting and illuminated traffic signs

1.10 Highway electrical equipment and supporting works shall be overseen, installed and maintained by organisations registered to and operating in compliance with a quality management scheme in accordance with "Quality management schemes" in Section 7 of GC 101 [Ref 15.N].

Verification requirements for electrical work for road lighting and illuminated traffic signs

1.11 Verification shall be undertaken for electrical work for road lighting and illuminated traffic signs, and associated infrastructure, through inspection and testing in accordance with BS 7671 [Ref 24.N].

1.12 The frequency of inspection and testing of electrical work for road lighting and illuminated traffic signs, and associated infrastructure, shall be at least once per electrical work prior to commissioning.

1.13 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to inspection and testing of electrical work for road lighting and illuminated traffic signs, and associated infrastructure.

Documentation requirements for electrical work for road lighting and illuminated traffic signs

1.14 The following Documentation shall be submitted for all test equipment prior to the commencement of being used for site works: calibration certificates.

1.15 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to all test equipment calibration certificates.

1.16 The following Documentation for all test equipment shall be submitted as continuous records: test equipment calibration register.

1.17 The requirements of "Records" in Section 3 of GC 101 [Ref 15.N] shall apply to the test equipment calibration register.

1.18 The manufacturer, type of equipment and serial number of the test equipment used to carry out a test shall be clearly recorded on any test result documentation and/or certification.

1.19 The following Documentation shall be submitted for electrical inspection and testing prior to the commencement of commissioning: electrical installation certificates in accordance with BS 7671 [Ref 24.N].

1.20 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to electrical installation certificates.

2. Feeder pillars for road lighting and illuminated traffic signs

General requirements for feeder pillars for road lighting and illuminated traffic signs

2.1 The design of new feeder pillars for road lighting and illuminated traffic signs shall be in accordance with "General requirements for electrical work for road lighting and illuminated traffic signs" in Section 1 of this document.

2.2 New feeder pillars for road lighting and illuminated traffic signs shall be as specified in TC 501/WSR/002.

New feeder pillars for road lighting and illuminated traffic signs					
New feeder pillar reference number	**Location**	**Drawing or model reference(s)**	**Fabrication material, where specified**	**External colour, where specified**	**Heating requirements**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter a unique reference.

b) Enter text, to identify the location at which the new feeder pillar is to be installed.

c) Enter text, to identify the drawing(s) in which details of the required new feeder pillar are shown.

d) Enter text, to identify, where the Overseeing Organisation wishes to do so, the material e.g. galvanised steel, painted galvanised steel, glass reinforced plastic, stainless steel, from which the new feeder pillar is to be fabricated.

e) Enter text, to identify, where the Overseeing Organisation wishes to do so, the external colour of the new feeder pillar by reference to a formal colour coding system e.g BS 4800 or RAL.

f) Enter text, to define the heating requirements for the feeder pillars.

New feeder pillars for road lighting and illuminated traffic signs (continued)		
New feeder pillar reference number	**Ventilation requirements**	**Internal lighting requirements**
(a)	(g)	(h)

g) Enter text, to define the ventilation requirements for the feeder pillars.

h) Enter text, to define the internal lighting requirements for the feeder pillars.

2.3 Existing feeder pillars for modification shall be as specified in TC 501/WSR/002.

Existing feeder pillars for modification			
Existing feeder pillar reference number	**Location**	**Description of required modification**	**Drawing or model reference(s)**
(a)	(b)	(c)	(d)

a) Enter a unique reference.

b) Enter text, to identify the location of the existing feeder pillar to be modified.

c) Enter text, to describe the extent to which the existing feeder pillar is to be modified.

d) Enter text, to identify the drawing(s) or model(s) in which details of the existing feeder pillar modifications are shown.

2.4 Hard standings for new and existing feeder pillars shall comply with "General requirements for footway, cycle track and paved area construction" in Section 1 of CC 207 [Ref 14.N].

Design documentation for feeder pillars for road lighting and illuminated traffic signs

2.5 The following Documentation shall be submitted for new feeder pillars and modifications to existing feeder pillars prior to the commencement of the works: detailed design proposals including design drawings of feeder pillar layout and circuits in accordance with TD 501 [Ref 25.N].

2.6 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to the detailed design proposals of new feeder pillars and modifications to existing feeder pillars.

Product requirements for feeder pillars for road lighting and illuminated traffic signs

2.7 Where non-stainless steel is used for the fabrication of new steel feeder pillars, the steel shall be galvanised, unless otherwise stated in TC 501/WSR/002.

SI.2.7 Where non-stainless steel is used for the fabrication of new steel feeder pillars, the requirements for corrosion protection shall be as follows: [enter free text].

2.8 The galvanising of new steel feeder pillars, where used, shall be compliant with BS EN ISO 1461 [Ref 17.N].

2.9 Where painted galvanised steel is used for the fabrication of new steel feeder pillars, the protective system shall be G2a or G2b in accordance with CC 486 [Ref 23.N], unless otherwise stated in TC 501/WSR/002.

SI.2.9 Where painted galvanised steel is used for the fabrication of new steel feeder pillars, the requirements for the protective system shall be [enter free text].

Installation requirements for feeder pillars for road lighting and illuminated traffic signs

2.10 Feeder pillars for road lighting and illuminated traffic signs shall be installed in accordance with the manufacturer's instructions.

Verification requirements for feeder pillars for road lighting and illuminated traffic signs

2.11 Verification shall be undertaken for feeder pillars by inspection to confirm the feeder pillars are free of defects and damage, and the installation is in accordance with the detailed design proposals and manufacturer instructions.

2.12 The frequency of inspection shall be once on completion of installation.

2.13 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to the inspection of feeder pillars.

Documentation requirements for feeder pillars for road lighting and illuminated traffic signs

2.14 The following Documentation shall be submitted for new feeder pillars and modifications to existing feeder pillars prior to the commencement of handover into maintenance: certification that the feeder pillars and modifications to existing feeder pillars are free of defects and damage, and the installation is in accordance with the detailed design proposals and manufacturer instructions.

2.15 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to certification for new feeder pillars and modifications to existing feeder pillars.

3. Central Management System equipment for road lighting

General requirements for Central Management System equipment for road lighting

3.1 The proposed central management system (CMS) equipment shall be compatible with the existing CMS, where present.

3.2 Details of the existing Central Management System (CMS), where present shall be as defined in TC 501/WSR/003.

Details of the existing Central Management System (CMS), where present					
Existing CMS reference	**Existing CMS manufacturer and model**	**Existing CMS description of functionality**	**Existing CMS as-built documentation**	**Constraints**	**Compatibility requirements**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter text, to identify the CMS reference.

b) Enter text, to identify the CMS manufacturer and model.

c) Enter text, to describe the CMS functionality and objectives.

d) Enter text, to identify CMS as-built information.

e) Enter text, to identify any notable constraints.

f) Enter text, to identify the compatibility requirements of existing CMS equipment.

Details of the existing Central Management System (CMS), where present (continued)	
Existing CMS reference	**Modifications to existing CMS**
(a)	(g)

h) Enter text, to identify CMS modifications required to enable the addition of new equipment.

3.3 The Central Management System (CMS) equipment shall be compatible with and able to integrate in to the existing system without the need for its modification, unless otherwise stated in TC 501/WSR/003.

3.4 Shorting plugs or dummy photo-electric control units shall not be used.

3.5 CMS base stations shall be as specified in TC 501/WSR/003.

CMS base stations				
Base station reference	**Drawing/Model reference(s)**	**Mounting location**	**Mounting type**	**Mounting height**
(a)	(b)	(c)	(d)	(e)

a) Enter a unique reference.

b) Enter text, to provide the reference(s) to the drawing(s)/models(s) that show the base station.

c) Enter text, to identify the location the base station is installed.

d) Enter text, to identify the mounting type of the base station.

e) Enter a number range (e.g. "40-60") in units of mm, to identify the mounting height of the base station.

3.6 CMS nodes shall be as specified in TC 501/WSR/003.

CMS nodes				
CMS node reference	**Drawing/Model reference(s)**	**Luminaire for road lighting reference**	**Socket type**	**Mounting height**
(a)	(b)	(c)	(d)	(e)

a) Enter a unique reference.

b) Enter text, to provide the reference(s) to the drawing(s)/models(s) that show the node.

c) Enter a unique reference, to identify the luminaire the node is connected to.

d) Enter text, to identify the type of socket for the CMS node.

e) Enter a number in units of mm, to identify the mounting height of the nodes.

Installation requirements for Central Management System equipment for road lighting

3.7 CMS equipment shall be installed in accordance with the manufacturer's instructions.

Commissioning and handover of Central Management System equipment for road lighting

3.8 The process for commissioning and handover of CMS equipment for road lighting shall be in accordance with TG 501.

3.9 The Commissioning Plan for CMS equipment for road lighting document reference shall be as stated in TC 501/WSR/003.

SI.3.9 The Commissioning Plan for CMS equipment for road lighting document reference shall be [enter free text].

3.10 The Handover Schedule for CMS equipment for road lighting document reference shall be as stated in TC 501/WSR/003.

SI.3.10 The Handover Schedule for CMS equipment for road lighting document reference shall be [enter free text].

Documentation requirements for commissioning and handover of Central Management System equipment for road lighting

3.11 The following Documentation shall be submitted for CMS equipment for road lighting prior to the commencement of installation of the CMS equipment: Commissioning Plan and Handover Schedule for CMS equipment for road lighting.

3.12 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to Commissioning Plan and Handover Schedule for CMS equipment for road lighting.

3.13 The Commissioning Plan for CMS equipment for road lighting document shall be updated in accordance with TG 501.

3.14 The Handover Schedule for CMS equipment for road lighting document shall be updated in accordance with TG 501.

4. Switching equipment for road lighting where no CMS is installed

Product requirements for switching equipment for road lighting where no CMS is Installed

Product requirements for photo-electric control units for road lighting

4.1 Photo-electric control units shall be compliant with BS 5972 [Ref 28.N].

4.2 The provision of photo-electric control units shall be as stated in TC 501/WSR/004.

SI.4.2a The provision of photo-electric control units shall be [select one or more from: not applicable, individually switched, group switched].

SI.4.2b The references for drawing(s)/model(s) that show the photo-electric control units shall be [enter free text].

SI.4.2c The location(s) of the photo-electric control units for group switching shall be [enter free text].

4.3 Photo-electric control units shall have a maximum power consumption of 0.25 watts.

4.4 Photo-electric control units shall incorporate an integrated delay sensitivity function to prevent the light source switching in response to adverse weather conditions.

4.5 The switching regime for photo-electric control units shall be as stated in TC 501/WSR/004.

SI.4.5 The switching regime for photo-electric control units shall be [enter free text].

Product requirements for timers for road lighting

4.6 Timers for road lighting shall be as specified in TC 501/WSR/004.

Timers for road lighting				
Timer reference	**Drawing/model reference(s)**	**Time circuit activated**	**Time circuit deactivated**	**Additional timer requirements**
(a)	(b)	(c)	(d)	(e)

a) Enter a unique reference, to identify the timer.

b) Enter text, to identify the references for drawing(s)/model(s) that show the timers.

c) Enter a number, to identify the time that the lighting circuit is switched on.

d) Enter a number, to identify the time that the lighting circuit is switched off.

e) Enter text, to identify additional requirements for timers, where required.

4.7 Timers for road lighting shall be used in conjunction with a contactor.

4.8 Timers for road lighting shall have an integrated astro/solar capability.

5. Power cables for road lighting and illuminated traffic signs

General requirements for power cables for road lighting and illuminated traffic signs

5.1 The method of cabling from column to column shall be a loop in, loop out arrangement, unless otherwise stated in TC 501/WSR/005.

SI.5.1 The method of cabling from column to column, and the locations to which it applies shall be [enter free text].

5.2 Power cables for road lighting and illuminated traffic signs shall be in accordance with "General requirements for electrical work for road lighting and illuminated traffic signs" in Section 1 of this document.

5.3 Power cables for road lighting and illuminated traffic signs shall be as stated in TC 501/WSR/005.

Power cables for road lighting and illuminated traffic signs						
Power cable reference	**Drawing or model reference(s)**	**Power cable construction description**	**Start location**	**End location**	**Outer sheathing material**	**Cross sectional area**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a unique reference, to provide a unique power cable reference.

b) Enter a unique reference.

c) Enter text, to describe the construction characteristics of the power cable.

d) Enter text, to identify the location at which the power cable will start in terms of coordinates, a specific column reference or the reference of another feature such as feeder pillar.

e) Enter text, to identify the location at which the power cable will end in terms of coordinates, a specific column reference or the reference of another feature such as feeder pillar.

f) Enter text, to identify the outer sheathing material of the power cables.

g) Enter a number in units of mm, to identify the cross sectional area of the power cable.

Power cables for road lighting and illuminated traffic signs (continued)			
Power cable reference	**Number of cores**	**Installation method**	**Depth of power cable trench (where applicable)**
(a)	(h)	(i)	(j)

h) Enter one or more values, from options 3, 5, to identify the number of cores of the power cable.

i) Enter a value, from options Direct burial, Ducted, to identify the installation method of the power cable.

j) Enter a number in units of mm, to identify the depth of power cable trench when installation method is direct burial.

Product requirements for power cables for road lighting and illuminated traffic signs

5.4 Power cables for road lighting and illuminated traffic signs shall be compliant with BS 5467 [Ref 27.N].

5.5 The power cables for road lighting and illuminated traffic signs shall meet the following performance characteristics: as listed in TC 501/WSR/005.

5.6 The requirements for "Product certification schemes" in Section 11 of GC 101 [Ref 15.N] shall apply to power cables for road lighting and illuminated traffic signs.

5.7 The conductive core insulation for power cables shall be identifiable by colour continuously throughout its length for the function it is being used for in accordance with BS 7671 [Ref 24.N].

Installation requirements for power cables for road lighting and illuminated traffic signs

5.8 The power cable installation methodology shall minimise unauthorised access and removal of cabling.

5.9 Power cables directly buried under verges, foot ways or open ground shall have a minimum cover of 500 mm.

5.10 Power cables directly buried under verges, foot ways or open ground shall be positioned and provided in accordance with NJUG 1 [Ref 30.N].

5.11 Power cables laid in trench shall be both bedded on and covered by a 100mm thickness of lightly compacted graded sand, unless otherwise stated in TC 501/WSR/005.

SI.5.11a The details of the bedding of the power cables laid in trench shall be [enter free text].

SI.5.11b The details of the covering of the power cables laid in trench shall be [enter free text].

Documentation for power cables for road lighting and illuminated traffic signs

5.12 The following Documentation for power cables for road lighting and illuminated traffic signs shall be submitted as continuous records: as-built records of power cables for road lighting and illuminated traffic signs.

5.13 The requirements of "Records" in Section 3 of GC 101 [Ref 15.N] shall apply to as-built records of power cables for road lighting and illuminated traffic signs.

Removal requirements for power cables for road lighting and illuminated traffic signs

5.14 Abandoned buried power cables shall be removed, unless otherwise stated in TC 501/WSR/005.

SI.5.14a Abandoned buried power cables to be left in place shall be as follows: [enter free text].

SI.5.14b The treatment of abandoned buried power cables after electrical isolation and disconnection shall be [enter free text].

5.15 The following Documentation for abandoned power cables not removed shall be submitted as continuous records: identified and recorded on as-built drawings.

5.16 The requirements of "Records" in Section 3 of GC 101 [Ref 15.N] shall apply to the as-built records of abandoned power cables not removed.

6. Power cable ducting for road lighting and illuminated traffic signs

General requirements for power cable ducting for road lighting and illuminated traffic signs

Power cable ducting for road lighting and illuminated traffic signs

6.1 Power cable ducting for road lighting and illuminated traffic signs shall be in accordance with "General requirements for electrical work for road lighting and illuminated traffic signs" in Section 1 of this document.

6.2 Power cable ducting for road lighting and illuminated traffic signs shall be as specified in TC 501/WSR/006.

Power cable ducting for road lighting and illuminated traffic signs						
Duct reference	**Start location**	**End location**	**Number of existing ducts to be re-used**	**Details of proven existing ducts to be re-used**	**Number of new ducts**	**Duct internal diameter**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a unique reference.

b) Enter text, to identify the start location of the power cable ducting in terms of coordinates, a specific chamber reference or the reference of another feature such as feeder pillar.

c) Enter text, to identify the end location of the power cable ducting in terms of coordinates, a specific chamber reference or the reference of another feature such as feeder pillar.

d) Enter a number, to identify the number of proven existing ducts to be re-used.

e) Enter text, to provide details of proven existing ducts to be re-used.

f) Enter a number, to identify the number of new ducts to be installed.

g) Enter a number in units of mm, to identify the internal diameter of new ducts to be installed.

Power cable ducting for road lighting and illuminated traffic signs (continued)						
Duct reference	**Duct colour**	**Minimum depth of power cable ducting**	**Does the new power cable ducting route include a carriageway crossing?**	**If new cross-carriageway ducting is required, could trenchless techniques be used?**	**Carriageway(s) to be crossed (where applicable)**	**Does the new power cable ducting route include ducting through a structure?**
(a)	(h)	(i)	(j)	(k)	(l)	(m)

h) Enter text, to identify the external colour appearance of new duct.

i) Enter a number in units of mm, to identify the minimum depth of the new power cable ducting between the start and end locations.

j) Enter a value, from options Yes, No, to identify whether the new power cable ducting route includes a carriageway crossing.

k) Enter a value, from options Yes, No, N/A, to identify whether the new power cable ducting route could be made using trenchless techniques.

l) Enter text, to identify, where applicable, the carriageway(s) to be crossed by the new power cable ducting.

m) Enter a value, from options Yes, No, to identify whether the new power cable ducting route includes ducting through a structure.

Power cable ducting for road lighting and illuminated traffic signs (continued)		
Duct reference	**Structure(s) through which the new power cable ducting will pass (where applicable)**	**Drawing, model or specification reference(s)**
(a)	(n)	(o)

o) Enter text, to identify, where applicable, the structure(s) through which the new power cable ducting will pass.

p) Enter a unique reference, to identify the drawing(s), model(s) or specification(s) in which the details of the required new power cable ducting, including any new cross-carriageway ducting and new ducting through structures, are shown.

Chambers for power cable ducting for road lighting and illuminated traffic signs

6.3 New chambers for power cable ducting for road lighting and illuminated traffic signs shall be as detailed in TC 501/WSR/006.

New chambers for power cable ducting for road lighting and illuminated traffic signs						
New chamber reference	**New chamber location**	**Minimum new chamber size**	**New chamber construction type**	**New chamber cover type**	**New chamber cover lifting and locking mechanisms (where applicable)**	**New chamber drainage mechanism**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a unique reference.

b) Enter text, to identify the location at which the chamber is to be installed.

c) Enter a number in units of mm, to identify the minimum dimensions of the new chamber to be installed.

d) Enter text, to identify the method of construction of the new chamber e.g. brick, precast concrete, plastic.

e) Enter a value, from options B125, C250, D400, E600, to identify the type of new chamber cover with respect to BS EN 124-1 [Ref 16.N].

f) Enter text, to identify, where applicable, the new chamber cover lifting and locking mechanisms to be installed.

g) Enter text, to identify the new chamber drainage mechanism to be installed.

New chambers for power cable ducting for road lighting and illuminated traffic signs (continued)	
New chamber reference	**Drawing, model or specification reference(s)**
(a)	(h)

h) Enter text, to identify the drawing(s), model(s) or specification(s) in which the details of the required new chamber installation are shown.

6.4 Existing chambers to be modified for new power cable ducting for road lighting and illuminated traffic signs shall be as detailed in TC 501/WSR/006.

Existing chambers to be modified for new power cable ducting for road lighting and illuminated traffic signs				
Existing chamber reference	**Existing chamber location**	**Existing chamber construction**	**Description of existing chamber modification required**	**Drawing, model or specification reference(s)**
(a)	(b)	(c)	(d)	(e)

a) Enter a unique reference.

b) Enter text, to identify the location of the existing chamber to be modified.

c) Enter text, to identify the construction material used for existing chamber e.g. brick, precast concrete, plastic.

d) Enter text, to describe the extent to which the existing chamber is to be modified.

e) Enter text, to identify the drawing(s), model(s) or specification(s) in which the details of the modifications to the existing chamber are shown.

Product requirements for power cable ducting for road lighting and illuminated traffic signs

6.5 New power cable ducting for road lighting and illuminated traffic signs shall be compliant with BS EN 61386-24 [Ref 4.N].

6.6 The new power cable ducting for road lighting and illuminated traffic signs shall meet the performance characteristics as stated in table 6.6.

Table 6.6 Performance requirements for new power cable ducting	
Performance characteristic	Minimum performance class or level
Resistance to compression	Type 450
Resistance to impact	Normal (Code N)
Resistance to bending	Pliable

6.7 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 15.N] shall apply to new power cable ducting for road lighting and illuminated traffic signs.

NI/6.8 New power cabling ducting for road lighting and illuminated traffic signs shall be coloured orange in accordance with NJUG 1 [Ref 30.N] .

6.9 New power cable ducting for road lighting and illuminated traffic signs shall have a smooth internal bore and be free of obstruction, to enable the installation of new power cables.

6.10 Joints between sections of new power cable ducting for road lighting and illuminated traffic signs shall be compatible with the new or existing power cable ducting products that they are joining.

6.11 The ingress protection of new joints between sections of new or existing power cable ducting for road lighting and illuminated traffic signs shall be compliant with BS EN 60529 [Ref 9.N].

6.12 The ingress protection of new joints between sections of new or existing power cable ducting for road lighting and illuminated traffic signs shall meet the following performance characteristics: IP 67.

6.13 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 15.N] shall apply to ingress protection of new joints between sections of new or existing power cable ducting for road lighting and illuminated traffic signs.

6.14 Marker tape to be installed above new power cable ducting for road lighting and illuminated traffic signs shall comply with the requirements of Table 6.14, unless otherwise stated in TC 501/WSR/006.

Table 6.14 Minimum requirements for marker tape for cable ducting for road lighting and illuminated traffic signs

Item	Characteristic		Requirement
1.	Minimum service life of marker tape		30 years
2.	Colour of marker tape		Yellow
3.	Detection mechanism		Embedded metallic wire(s)
4.	Minimum width of marker tape		150mm
5.	Legend	Text	CAUTION STREET LIGHTING POWER CABLE
6.		Colour	Black
7.		Minimum height of characters	35mm

SI.6.14 The requirement for new marker tape to be installed above new power cable ducting for road lighting and illuminated traffic signs shall be altered as follows: [enter free text].

6.15 New chambers for new power cable ducting for road lighting and illuminated traffic signs shall comply with the product requirements for "Chambers for roadside technology and communications" in Section 14 of TC 131 [Ref 26.N].

6.16 New chamber covers for road lighting and illuminated traffic signs shall be compliant with BS EN 124-1 [Ref 16.N].

Installation requirements for power cable ducting for road lighting and illuminated traffic signs

6.17 New power cable ducting for road lighting and illuminated traffic signs shall be installed so that the installation or removal of new or existing power cables is not hindered by changes in the direction or elevation of the new or existing power cable ducting.

6.18 New marker tape shall be installed at a minimum of 150mm below finished ground level and above all new power cable ducting for road lighting and illuminated traffic signs.

6.19 New power cable ducting for road lighting and illuminated traffic signs shall be free of damage and debris before the installation of new power cables.

6.20 Draw cords for new power cable ducting for road lighting and illuminated traffic signs shall comply with the 'draw cords' requirements of "Ducts for roadside technology and communications" in Section 15 of TC 131 [Ref 26.N].

6.21 The requirements for sealing new power cable ducting for road lighting and illuminated traffic signs following the installation of new power cables shall be as stated in TC 501/WSR/006.

SI.6.21 The requirements for sealing new power cable ducting for road lighting and illuminated traffic signs following the installation of new power cables shall be: [enter free text].

6.22 The installation of new chambers for new power cable ducting for road lighting and illuminated traffic signs shall comply with the installation requirements for "Chambers for roadside technology and communications" in Section 14 of TC 131 [Ref 26.N].

6.23 Backfilling of excavations for new power cable ducting and new chambers for road lighting and illuminated traffic signs shall comply with "General earthworks construction" in Section 5 of CC 601 [Ref 10.N].

6.24 Backfilling of excavations for power cable ducting for road lighting and illuminated traffic signs shall be undertaken immediately after the installation of power cable ducting is completed to prevent damage by the ingress of foreign matter.

Verification of power cable ducting for road lighting and illuminated traffic signs

6.25 Verification shall be undertaken for power cable ducting for road lighting and illuminated traffic signs by testing in accordance with Communications power cable ducts for roadside technology and communications in Section 15 of TC 131 [Ref 26.N].

6.26 The frequency of testing of power cable ducting for road lighting and illuminated traffic signs shall be at least once per power cable duct prior to commissioning.

6.27 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to testing of power cable ducting for road lighting and illuminated traffic signs.

6.28 Verification shall be undertaken for chambers for power cable ducting for road lighting and illuminated traffic signs by testing in accordance with Communications chambers for roadside technology and communications in Section 14 of TC 131 [Ref 26.N].

6.29 The frequency of testing of chambers for power cable ducting for road lighting and illuminated traffic signs shall be at least once per chamber prior to commissioning.

6.30 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to testing of chambers for power cable ducting for road lighting and illuminated traffic signs.

Documentation for power cable ducting for road lighting and illuminated traffic signs

6.31 The following Documentation for power cable ducting for road lighting and illuminated traffic signs shall be submitted as continuous records: As-built drawings recording depths and offsets of power cable ducting measured at every 100m and at each interface with a chamber, including the details of the linear highway feature used as a parallel reference for offsets.

6.32 The requirements of "Records" in Section 3 of GC 101 [Ref 15.N] shall apply to depths and offsets of power cable ducting for road lighting and illuminated traffic signs.

6.33 The following Documentation shall be submitted for power cable ducting and chambers for road lighting and illuminated traffic signs prior to the commencement of handover into maintenance: test results demonstrating compliance with the requirements of this document.

6.34 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to test results demonstrating compliance with the requirements of this document for power cable ducting and chambers for power cable ducting for road lighting and illuminated traffic signs.

7. Switch-gear for road lighting and illuminated traffic signs

General requirements for switch-gear for road lighting and illuminated traffic signs

7.1 All switch-gear for road lighting and illuminated traffic signs shall be compliant with BS 7654 [Ref 29.N].

7.2 The selection and erection of switch-gear for road lighting and illuminated traffic signs shall be compliant with BS 7671 [Ref 24.N].

Product requirements for switch-gear for road lighting and illuminated traffic signs

7.3 All switch-gear for road lighting and illuminated traffic signs shall be compliant with BS EN 60947-1 [Ref 18.N].

7.4 The switch-gear for road lighting and illuminated traffic signs shall meet the performance characteristics as stated in table 7.4.

Table 7.4 Performance characteristics for switchgear

Performance characteristic	Minimum performance requirement
Ingress protection	IP 22
Pollution Degree	3

7.5 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 15.N] shall apply to switchgear for road lighting and illuminated traffic signs.

7.6 Switch-gear for road lighting and illuminated traffic signs shall comprise a modular system that creates a singular unit.

7.7 All switch-gear for road lighting and illuminated traffic signs shall have double-pole isolation.

7.8 All switch-gear for road lighting and illuminated traffic signs shall have shrouded incoming phase terminals.

7.9 Electrical disconnection systems for lighting columns for road lighting shall be as specified in TC 501/WSR/007.

Electrical disconnection systems for lighting columns for road lighting	
Minor Structure reference	**Electrical disconnection method**
(a)	(b)

a) Enter a unique reference, to define the unique reference for the lighting column requiring an electrical disconnection system. The minor structure reference is the unique identifier that is used for cross-referencing to that minor structure throughout this document and CC 481 [Ref 21.N].

b) Enter text, to identify the type of electrical disconnection, if required.

7.10 Electrical disconnection systems for illuminated traffic signs shall be as specified in TC 501/WSR/007.

Electrical disconnection systems for illuminated traffic signs	
Illuminated traffic sign reference	**Electrical disconnection method**
(a)	(b)

a) Enter a unique reference, to define the unique reference for the illuminated traffic sign requiring an electrical disconnection system. The illuminated traffic sign reference is the unique identifier that is used for cross-referencing to that illuminated traffic sign throughout this document and CC 120 [Ref 5.N].

b) Enter text, to identify the type of electrical disconnection if required.

Installation requirements for switch-gear for road lighting and illuminated traffic signs

7.11 Connections to electrical switch-gear and components for road lighting and illuminated traffic signs shall be terminated to avoid accidental detachment.

7.12 All switch-gear for road lighting and illuminated traffic signs shall be attached to a backboard with a fixing resistant to corrosion.

7.13 All switch-gear for road lighting and illuminated traffic signs shall be installed in accordance with the manufacturer's instructions.

Documentation requirements for switch-gear for road lighting and illuminated traffic signs

7.14 The following Documentation shall be submitted for switch-gear prior to the commencement of construction: schedules of all isolators, cut outs and fuses.

7.15 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to schedules of all isolators, cut outs and fuses.

8. Luminaires for road lighting and illuminated traffic signs

General requirements for luminaires for illuminated traffic signs

8.1 Luminaires for illuminated traffic signs shall be in accordance with CC 120 [Ref 5.N].

General requirements for luminaires for road lighting

8.2 Luminaires for road lighting shall include drivers, sockets, control systems, light sources, and a retention device to prevent the luminaire, or parts thereof, falling in the event of a failure of any fixing device.

8.3 Luminaires for road lighting shall be suitable for the lighting column or bracket to which it is intended.

8.4 The design of luminaires for road lighting shall be in accordance with "General requirements for electrical work for road lighting and illuminated traffic signs" in Section 1 of this document.

8.5 Luminaires for road lighting shall be selected to meet the road lighting criteria specified in TC 501/WSR/008.

Luminaires for road lighting

Road lighting zone reference	**Road lighting zone drawing / model reference(s)**	**Lighting class in accordance with BS 5489-1 [Ref 2.N]**	**Lighting constraints**	**Power density indicator**	**Annual energy consumption indicator**	**Dimming profile**
(a)	(b)	(c)	(d)	(e)	(f)	(g)

a) Enter a unique reference, to provide a unique reference to the road lighting zone to which the road lighting criteria apply.

b) Enter text, to identify the drawing(s) / model(s) that define spatial extents of the road lighting zone.

c) Enter text, to define the lighting class for the road lighting zone in accordance with BS 5489-1 [Ref 2.N].

d) Enter text, to to define any constraints that influence the selection of a luminaire for example overhead lines, ecology.

e) Enter a number in units of W/(m.K), to define the energy efficiency of the zone.

f) Enter a number in units of W/(m.K), to define the annual efficiency of the zone.

g) Enter text, to define the dimming characteristics of the luminaire where no CMS is present.

8.6 Luminaires for road lighting shall be as specified in TC 501/WSR/008.

Luminaires for road lighting							
Luminaire for road lighting reference	**Road lighting zone reference(s)**	**Drawing/ model reference(s)**	**Luminaire for road lighting support**	**Mounting height**	**Minor structure reference**	**Maximum weight**	**Maximum windage area**
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)

a) Enter a unique reference.

b) Enter text, to provide the unique reference(s) to the road lighting zone(s) to which the road lighting criteria apply.

c) Enter text, to identify the reference(s) of the drawing(s) / model(s) that show the location of the luminaire for road lighting.

d) Enter text, to describe how the luminaire for road lighting is supported.

e) Enter a number in units of m, to define the height of the luminaire for road lighting above adjacent ground level.

f) Enter a unique reference, to identify the minor structure to which the luminaire for road lighting is attached (where applicable).

g) Enter a number in units of kg, to define the maximum weight of the luminaire for road lighting to ensure compatibility with the lighting column for road lighting to ensure compatibility with the lighting column.

h) Enter a number in units of m^2, to define the maximum windage area of the luminaire for road lighting to ensure compatibility with the lighting column.

Luminaires for road lighting (continued)							
Luminaire for road lighting reference	**Lumen output**	**Design attitude**	**Minimum luminous intensity class**	**Shield requirements**	**Correlated Colour Temperature (CCT) (K)**	**Minimum Colour Rendering Index (CRI)**	**Photobiological risk level**
(a)	(i)	(j)	(k)	(l)	(m)	(n)	(o)

i) Enter a number in units of lm, to define the lumen output of the luminaire for road lighting.

j) Enter a number in units of °, to specify the angle of displacement of the luminaire for road lighting from the horizontal.

k) Enter one or more values, from options G4, G5, G6, to define the minimum luminous intensity class for the luminaire for road lighting.

l) Enter text, to identify any shields required to be fitted to the luminaire for road lighting.

m) Enter text, to define the colour temperature of the luminaire for road lighting in Kelvin.

n) Enter a number, to identify the minimum CRI value of the luminaire for road lighting.

o) Enter a value, from options RG0, RG1, to define the level of retinal blue-light exposure from a light source.

Luminaires for road lighting (continued)								
Luminaire for road lighting reference	**Driver current**	**Maximum power output**	**Control socket**	**Socket type**	**IP code**	**IK code**	**Class of protection against electric shock**	**Surge protection (kV)**
(a)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)

p) Enter a number in units of mA, to define the current rating of the luminaire for road lighting driver.

q) Enter a number in units of W, to define the maximum power output of the luminaire for road lighting.

r) Enter a value, from options Yes, No, to define whether the luminaire for road lighting requires a control socket.

s) Enter a value, from options NEMA, Zhaga, N/A, to identify ZD4i certified Zhaga sockets, either 7-pin NEMA or Zhaga book 18.

t) Enter a value, from options IP65, IP66, to define the minimum degree of protection, Ingress Protection (IP) code, for the luminaire for road lighting in accordance with BS EN 60529 [Ref 9.N].

u) Enter a value, from options IK08, IK09, IK10, IK11, to define the minimum degree of protection, Impact Protection (IK) code, for the luminaire for road lighting in accordance with BS EN 62262 [Ref 8.N].

v) Enter a value, from options Class I, Class II, Class III, to define the level of physical protection against live components.

w) Enter a number in units of kV, to identify surge protection in accordance with BS 7671 [Ref 24.N], with a minimum of 6kV.

Luminaires for road lighting (continued)	
Luminaire for road lighting reference	**Minimum category of corrosivity of atmosphere**
(a)	(x)

x) Enter a value, from options C1,C2,C3,C4,C5,CX, to define the minimum category of corrosivity of atmosphere in accordance with BS EN ISO 9223 [Ref 6.N].

8.7 The following Documentation shall be submitted for modelling of road lighting in accordance with BS 5489-1 [Ref 2.N] a minimum of 4 weeks prior to the commencement of procurement of luminaires for road lighting: lighting calculation pack demonstrating that the design meets the requirements of WSR 501/008.

8.8 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to the lighting calculation pack demonstrating that the design meets the requirements of WSR 501/008.

8.9 All light sources for road lighting shall be Light Emitting Diode (LED).

Product requirements for luminaires for road lighting

8.10 Luminaires for road lighting shall be compliant with BS EN 60598-1 [Ref 19.N] and BS EN 60598-2-3 [Ref 20.N].

8.11 The luminaires for road lighting shall meet the performance characteristics as stated in table 8.10.

Table 8.11 Minimum performance characteristics for luminaires

Performance characteristic	Minimum performance requirement
Ingress protection (IP Code)	Refer to WSR 501/008
Impact protection (IK Code)	IK08, unless otherwise specified in WSR 501/008
Protection against electric shock (Class)	Class I, unless otherwise specified in to WSR 501/008

8.12 The requirements of "Designated standards" in Section 10 of GC 101 [Ref 15.N] shall apply to luminaires for road lighting.

8.13 Luminaires for road lighting shall fully electrically disconnect upon opening of the housing for maintenance.

8.14 Impact protection for luminaires for road lighting shall be compliant with BS EN 62262 [Ref 8.N].

8.15 Luminaires for road lighting shall be compliant with BS EN 62471 [Ref 22.N].

8.16 The luminaire for road lighting shall have a minimum photobiological hazard classification of RG0 (exempt), unless otherwise stated in TC 501/WSR/008.

8.17 The requirements of Designated standards in Section 10 of GC 101 [Ref 15.N] shall apply to luminaires for road lighting.

8.18 The power factor of luminaires for road lighting shall be a minimum of 0.9 at full load.

8.19 Luminaires for road lighting shall operate in climatic conditions with an ambient temperature range of -20 degrees C to +35 degrees C.

8.20 Luminaires for road lighting shall have a minimum lifetime depreciation of L90 at 100,000 hours, where L90 is defined as 90% of LEDs functioning after 100,000 hours of use, unless otherwise stated in TC 501/WSR/008.

SI.8.20 Luminaires for road lighting shall have a minimum lifetime depreciation of [enter free text].

8.21 LED drivers shall have Constant Light Output (CLO) technology integrated, unless otherwise stated in TC 501/WSR/008.

SI.8.21a The LED drivers that do not require the integration of Constant Light Output (CLO) technology shall be [enter free text].

SI.8.21b The alternative requirements for LED drivers, instead of Constant Light Output (CLO) technology, shall be [enter free text].

8.22 The BIN class of LED modules shall be within a 5-step MacAdam ellipse.

8.23 Luminaires for road lighting shall have a maximum Upward Light Output Ratio (ULOR) of 0% when mounted in horizontal position.

8.24 The gear compartment of the luminaire for road lighting shall be accessible without the use of tools.

8.25 Luminaires for road lighting shall have options to fit proprietary shields to the front, side and rear.

8.26 Luminaires for road lighting shall have an anti-condensation feature whilst maintaining IP rating.

8.27 The size and weight of luminaires for road lighting shall comply with the limitations of the lighting column and bracket to which they are attached.

8.28 Any extra protection to prevent the luminaire for road lighting, or any parts thereof, falling in the event of a failure of any fixing device shall not obstruct access to the luminaire.

8.29 Luminaires for road lighting shall be compliant with TM66 [Ref 7.N].

8.30 The luminaires for road lighting shall meet the performance characteristics stated in TC 501/WSR/008.

SI.8.30 The minimum Circular Economy Assessment Method (CEAM) rating of luminaires for road lighting, in accordance with TM66 [Ref 7.N] shall be [enter a number].

Product verification requirements for luminaires for road lighting

8.31 Verification shall be undertaken for luminaires for road lighting selection to confirm that the road lighting criteria specified in WSR 501/008 has been met through modelling in accordance with BS 5489-1 [Ref 2.N].

8.32 The frequency of modelling of road lighting in accordance with BS 5489-1 [Ref 2.N] shall be at least once per road lighting zone.

8.33 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to modelling of road lighting in accordance with BS 5489-1 [Ref 2.N].

8.34 Verification shall be undertaken for luminaire fall prevention measures/devices, and any extra protection, that they prevent the

luminaire for road lighting, or any parts thereof, falling in the event of the failure of any fixing device through written confirmation from the luminaire manufacturer.

8.35 The frequency of confirmation that the fixing devices, and any extra protection, prevent the luminaire for road lighting, or any parts thereof, falling in the event of the failure of any fixing device shall be at least once per type of luminaire.

8.36 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to confirmation that the fixing devices, and any extra protection, prevent the luminaire for road lighting, or any parts thereof, falling in the event of the failure of any fixing device.

Installation requirements for luminaires for road lighting

8.37 Luminaires for road lighting shall be fitted in accordance with the manufacturer’s instructions..

8.38 The orientation of the luminaire for road lighting shall be correct in both vertical and horizontal planes with fitting of the appropriate light shields, if required.

Installation verification requirements for luminaires for road lighting

8.39 Verification shall be undertaken for orientation of luminaires for road lighting.

8.40 The frequency of inspection of luminaire for road lighting orientation shall be at least once per luminaire, at installation.

8.41 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to inspection of luminaire for road lighting orientation.

Documentation requirements for luminaires for road lighting

8.42 The following documentation shall be submitted for each type of luminaire for road lighting:.

1. completed Luminaire Information Form;

2. manufacturer's drawings, QR code / barcode and specifications; and

3. calculations in accordance with BS 5489-1 [Ref 2.N].

8.43 Luminaire Information Forms, manufacturer's drawings, QR code / barcode and specifications, documentation as required in Designated standards in Section 10 of GC 101 [Ref 15.N], and calculations in accordance with BS 5489-1 [Ref 2.N] shall be submitted six weeks prior to the commencement of installation, unless otherwise stated in TC 501/WSR/008.

SI.8.43 The minimum time that Luminaire Information Forms, manufacturer's drawings, QR code / barcode and specifications, documentation as required in Designated standards in Section 10 of GC 101 [Ref 15.N], and calculations in accordance with BS 5489-1 [Ref 2.N] shall be submitted prior to the commencement of installation shall be [enter free text].

8.44 The requirements for Documentation in Section 2 of GC 101 [Ref 15.N] shall apply to Luminaire Information Forms, manufacturer's drawings, QR code / barcode and specifications, and calculations in accordance with BS 5489-1 [Ref 2.N].

8.45 The following information for each type of luminaire for road lighting shall be submitted in the Luminaire Information Form:.

1. make and model;
2. optic setting;
3. light source correlated colour temperature (CCT);
4. light source type e.g. LED;
5. weight (kg);
6. windage (m^2);
7. wattage;
8. lumen output;
9. luminous intensity rating;
10. surface finish;
11. surface colour;
12. Colour Rendering Index (CRI);
13. IK Rating;
14. IP Rating;

15. warranty duration;
16. surge protection rating; and
17. control socket type.

9. Power cable joints for road lighting and illuminated traffic signs

General requirements for power cable joints for road lighting and illuminated traffic signs

9.1 Power cable joints for road lighting and illuminated traffic signs shall be in accordance with "General requirements for electrical work for road lighting and illuminated traffic signs" in Section 1 of this document.

9.2 Power cable joints for road lighting and illuminated traffic signs shall be as specified in TC 501/WSR/009.

Power cable joints for road lighting and illuminated traffic signs					
Power cable joint reference	**Drawing / model reference(s)**	**Power cable joint type**	**Power cable joint details**	**Minimum current rating**	**Minimum ingress protection, where not IP68**
(a)	(b)	(c)	(d)	(e)	(f)

a) Enter a unique reference, to define the unique reference for the power cable joint for road lighting and illuminated traffic signs.

b) Enter text, to identify the drawing(s) / model(s) that show the location of the power cable joint for road lighting and illuminated traffic signs.

c) Enter text, to identify the type of power cable joint for road lighting and illuminated traffic signs.

d) Enter text, to identify the details of the power cable joint e.g. type / size of power cables to be joined for road lighting and illuminated traffic signs.

e) Enter a number in units of A, to define the minimum current rating of the joint for road lighting and illuminated traffic signs.

f) Enter text, to define the minimum ingress protection of the joint for road lighting and illuminated traffic signs, where not IP68.

Product requirements for power cable joints for road lighting and illuminated traffic signs

9.3 Power cable joints for road lighting and illuminated traffic signs shall be made using jointing kits complying with BS EN 50393 [Ref 32.N].

9.4 Power cable joints for road lighting and illuminated traffic signs shall be made using jointing kits complying with BS EN 50655-1 [Ref 12.N].

9.5 Power cable joints for road lighting and illuminated traffic signs shall be made using jointing kits complying with BS EN 50655-2 [Ref 11.N].

9.6 Power cable joints for road lighting and illuminated traffic signs shall have a minimum ingress protection of IP68, unless otherwise stated in TC 501/WSR/009.

Installation requirements for power cable joints for road lighting and illuminated traffic signs

9.7 Where multiple power cable core insulation colour sets are used, installation of power cable joints for road lighting and illuminated traffic signs shall be in accordance with BS 7671 [Ref 24.N].

9.8 Power cable joints for road lighting and illuminated traffic signs shall be installed in compliance with the manufacturer's instructions.

9.9 Power cable joints for road lighting and illuminated traffic signs shall be installed in compliance with BS 6910-2 [Ref 3.N].

9.10 Power cable joints for road lighting and illuminated traffic signs shall be supported so that they are not under tension.

9.11 Power cable joints for road lighting and illuminated traffic signs shall be prevented from sitting in water.

9.12 Power cable joints for road lighting and illuminated traffic signs shall be made in prepared ground.

9.13 The location of all power cable joints for road lighting and illuminated traffic signs shall be marked with a concrete 300mm x 300mm x 150mm joint marker block that clearly identifies the location of joints.

Verification requirements for power cable joints for road lighting and illuminated traffic signs

9.14 Verification shall be undertaken for power cable joints for road lighting and illuminated traffic signs through visual inspection to confirm quality of installation prior to commissioning.

9.15 The frequency of visual inspection shall be at least once per power cable joint for road lighting and illuminated traffic signs.

9.16 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to visual inspection of power cable joints for road lighting and illuminated traffic signs.

9.17 The following Documentation for power cable joints for road lighting and illuminated traffic signs shall be submitted as continuous records: as-built drawings showing the location of all power cable joints.

9.18 The requirements of "Records" in Section 3 of GC 101 [Ref 15.N] shall apply to as-built drawings for power cable joints for road lighting and illuminated traffic signs.

10. Commissioning of road lighting and illuminated traffic signs

Verification for commissioning of road lighting and illuminated traffic signs

10.1 Verification shall be undertaken for the automatic switching on and off and adaptive lighting levels, for the road lighting and illuminated traffic signs, through visual inspection prior to commissioning.

10.2 The frequency of visual inspection of the automatic switching on and off and adaptive lighting levels of road lighting and illuminated traffic signs shall be once at dusk and once at dawn, for each system.

10.3 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to the visual inspection of the automatic switching on and off and adaptive lighting levels of road lighting and illuminated traffic signs.

10.4 Verification shall be undertaken for the functionality of road lighting and illuminated traffic signs through visual inspection during the 'on' phase, prior to commissioning.

10.5 The frequency of visual inspection of the functionality of road lighting and illuminated traffic signs shall be once for each luminaire.

10.6 The requirements for "Verification" in Section 14 of GC 101 [Ref 15.N] shall apply to the visual inspection of the functionality of road lighting and illuminated traffic signs.

10.7 Verification of the performance of road lighting shall be undertaken, unless otherwise stated in TC 501/WSR/010.

SI.10.7 The verification of the performance of road lighting shall be [select one from: undertaken, not undertaken].

10.8 Where required by WSR 501/010, verification for the performance of road lighting shall be undertaken through testing in accordance with ILP TR28 [Ref 31.N].

10.9 The frequency of testing of the performance of road lighting in accordance with ILP TR28 [Ref 31.N], where required by WSR 501/010, shall be as stated in TC 501/WSR/010.

SI.10.9 The frequency of testing of the performance of road lighting in accordance with ILP TR28 [Ref 31.N], where required by WSR 501/010, shall be as followsh [enter free text].

10.10 The requirements for Verification in Section 14 of GC 101 [Ref 15.N] shall apply to the testing of the performance of road lighting in accordance with ILP TR28 [Ref 31.N], where required by WSR 501/010.

Documentation for commissioning of road lighting and illuminated traffic signs

10.11 The following Documentation shall be submitted for road lighting and illuminated traffic signs prior to the commencement of commissioning: handover documents in accordance with TG 501.

10.12 The requirements for "Documentation" in Section 2 of GC 101 [Ref 15.N] shall apply to handover documents for road lighting and illuminated traffic signs.

11. Normative references

The following documents, in whole or in part, are normative references for this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Ref.	Document
Ref 1.N	BSI. BS 7430, 'Code of practice for protective earthing of electrical installations'
Ref 2.N	BSI. BS 5489-1, 'Code of practice for the design of road lighting: Lighting of roads and public amenity areas'
Ref 3.N	BSI. BS 6910-2, 'Cold pour resin compound and heat-shrink cable joints in the voltage range up to 1000 V a.c. and 1500 V a.c. - Code of practice for on-site installation'
Ref 4.N	BSI. BS EN 61386-24, 'Conduit systems for cable management. Particular requirements. Conduit systems buried underground (Designated Standard - LVD)'
Ref 5.N	National Highways. CC 120, 'Construction of permanent traffic signs and road markings'
Ref 6.N	BSI. BS EN ISO 9223, 'Corrosion of metals and alloys - Corrosivity of atmospheres - Classification, determination and estimation'
Ref 7.N	Chartered Institution of Building Services Engineers (CIBSE). TM66, 'Creating a circular economy in the lighting industry'
Ref 8.N	BSI. BS EN 62262, 'Degree of protection provided by enclosures for electrical equipment against external mechanical Impacts (IK code)'
Ref 9.N	BSI. BS EN 60529, 'Degrees of protection provided by enclosures (IP code). (Designated Standard - LVD)'
Ref 10.N	National Highways. CC 601 'Earthworks'
Ref 11.N	BSI. BS EN 50655-2, 'Electric cables. Accessories. Material characterization. Fingerprinting for heat shrinkable components for low and medium voltage applications up to 20,8/36 (42) kV'
Ref 12.N	BSI. BS EN 50655-1, 'Electric cables. Accessories. Material characterization. Fingerprinting for resinous compounds'
Ref 13.N	National Highways. TG 411, 'Electricity supply connections'
Ref 14.N	National Highways. CC 207 'Footway, cycle track, paved area,

	kerb unit and access step construction'
Ref 15.N	National Highways. GC 101, 'General requirements for the Specification for Highway Works'
Ref 16.N	BSI. BS EN 124-1, 'Gully tops and manhole tops for vehicular and pedestrian areas. Definitions, classification, general principles of design, performance requirements and test methods'
Ref 17.N	BSI. BS EN ISO 1461, 'Hot dip galvanized coatings on fabricated iron and steel articles. Specifications and test methods'
Ref 18.N	BSI. BS EN 60947-1, 'Low voltage switchgear and control gear: General rules [Designated Standard - EMC & LVD]'
Ref 19.N	BSI. BS EN 60598-1, 'Luminaires. General requirements and tests (Designated Standard - LVD)'
Ref 20.N	BSI. BS EN 60598-2-3, 'Luminaires. Particular requirements. Luminaires for road and street lighting (Designated Standard - LVD)'
Ref 21.N	National Highways. CC 481, 'Minor Structures'
Ref 22.N	BSI. BS EN 62471, 'Photobiological safety of lamps and lamp systems [Designated Standard - LVD]'
Ref 23.N	National Highways. CC 486, 'Protection of steelwork against corrosion'
Ref 24.N	BSI. BS 7671, 'Requirements for Electrical Installations. IET Regulations'
Ref 25.N	National Highways. TD 501, 'Road lighting design'
Ref 26.N	National Highways. TC 131, 'Roadside technology and communications'
Ref 27.N	BSI. BS 5467, 'Specification for armoured electric cables having thermosetting insulation 600/1000 V and 1900/3300 V'
Ref 28.N	BSI. BS 5972, 'Specification for photo-electric control units for road lighting'
Ref 29.N	BSI. BS 7654, 'Specification for single phase street lighting fuses (cut-outs) for low voltage public electricity distribution systems., 25A rating for highway power supplies and street furniture'
Ref 30.N	National Joint Utilities Group . NJUG 1, 'Street Works UK Guidance on the Positioning and Colour Coding of

	Underground Utilities’ Apparatus'
Ref 31.N	Institution of Lighting Professionals. ILP TR28 , 'Technical Report 28 - Measurement of road lighting performance on site'
Ref 32.N	BSI. BS EN 50393, 'Test methods and requirements for accessories for use on distribution cables of rated voltage 0,6/1,0 (1,2) kV'