

Section S – ELECTRICAL SERVICES

LIST OF CLAUSES S

BUILDING CONTROL

S.0 Compliance with the Building Regulations

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- S.1 Consumer Electrical Installation
- S.2 Public Lighting Installation
- S.3 Nil
- S.4 Ducts for Cable Television Service
- S.5 Ducts for ESB
- S.6 Ducts for Supply to Lighting Standards
- S.7 Ducts for Telecoms Service
- S.8 Excavations
- S.9 Distribution systems generally

UNDERGROUND ESB DISTRIBUTION SYSTEM

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- S.11 ESB
- S.12 Ducts and Draw Wires
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- S.14 Nil
- S.15 Damage to ESB Equipment
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- S.17 Nil
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TELECOM CABLE TELEVISION DISTRIBUTION SYSTEMS

- S.19 Distribution Network
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- S.21 Joint Boxes
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APPENDIX A: LIST OF REFERENCES AND STANDARDS

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S.0 Compliance with Materials and workmanship with the Building Regulations

In order to demonstrate conformity with the Building Regulations (Part D; materials and workmanship), and with the Construction Products Regulation (Regulation (EU) No.305/2011) as set out in national rules for Ireland (S.I. No.225 of 2013), the Contractor shall provide proof (a Declaration of Performance (DoP)) and (where applicable) a CE marking for all building products to be placed in the works.

The Contractor shall ensure that the product to be incorporated in the works, while complying with CPR, is fit for the use for which it is intended. The Contractor may be required to demonstrate this by means of manufacturer's confirmation, or independent testing certificate.

GENERALLY

S.1 Consumer Electrical Installation

The consumer electrical installation shall be carried out and installed in accordance with Fingal County Council Standard Specification FSS 1.

S.2 Public Lighting Installation

The public lighting installation shall be carried out and installed in accordance with Fingal County Council Standard Specification FSS 2.

S.3 Nil

S.4 Ducts for Cable Television Services

Ducts for cable television shall be 100mm or 50mm uPVC complying with BS 3506:1969 or High-Density polythene pipe and couplers to IS 135:1975 Class B and shall be **GREEN** in colour in accordance with IS 370:2007.

Ducts of shall be laid in fully coupled unbroken lengths in locations as indicated on the drawings, and a drawing wire provided for pulling through. All laid in trenches not less than 600mm below finished ground level, and all to cable provider's requirements.

S.5 Ducts for E.S.B. Service

Ducts for E.S.B services shall be 50mm and 125mm uPVC complying with BS 3506:1969 or High-Density polythene pipe and couplers to IS 135:1975 Class B and shall be **RED** in colour, in accordance with IS 370:2007, and have "electric cable" stamped on them.

Ducts of shall be laid in fully coupled unbroken lengths in locations as indicated on the drawings, and a drawing wire provided for pulling through. A suitable indicator (eg. marked tape) shall be placed the length of the duct at 300mm below finished ground level.

Attention to the ESB document, 'Housing schemes electrical services standards guidebook' Revision 4, November 2013. All requirements should meet with the E.S.B. latest Codes of Practice.

S.6 Ducts for Supply to Lighting Standards

Ducts for supply to Lighting Standards shall be 50mm uPVC complying with BS 3506:1969 or High-Density polythene pipe and couplers to IS 135:1975 Class B shall be **RED** in colour, in accordance with IS 370:2007, and have 'public lighting duct' stamped on them, all in accordance with the latest ETCI Rules and the Public Lighting specifications of Fingal Co. Co.

Provide 125mm PVC ducts for road crossings as above. (See Clause S/E/7)

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Ducts of shall be laid in fully coupled unbroken lengths in locations as indicated on the drawings and a draw-wire provided for pulling through.

S.7 Ducts for Telecoms Services

Ducts for telecoms services shall be 100mm or 50mm high uPVC complying with BS 3506:1969 or High-Density polythene pipe; and couplers to IS 135:1975 Class B and shall be **GREY** in colour in accordance with IS 370:2007.

Ducts of shall be laid as in fully coupled unbroken lengths in locations as indicated on the drawings, and a drawing wire provided for pulling through. All laid in trenches not less than 600mm below finished ground level and all to Eircom requirements.

S.8 Excavations

All excavation and back filling for services (water, gas, electrical, telecoms, television etc.) is to be carried out by the Contractor. Back filling to services trenches under pavings shall consist of suitable graded gravel aggregate carefully consolidated.

S.9 Distribution systems generally

The external cables of the Electrical, Telecoms and Cable television distribution systems shall be carried out underground.

UNDERGROUND E.S.B. DISTRIBUTION SYSTEM

S.10 Electrical Distribution System

The electrical distribution system shall be as the Architects layout drawing and in accordance with the requirements of the E.S.B.

S.11 E.S.B.

The builder must open trenches, backfill and reinstate for all E.S.B. cables. The trench depth is to be 800mm unless otherwise stated. Sufficient sand must be provided to allow a 100mm layer to be placed on top of cable. The sand must be provided beside opened trenches at intervals specified by the E.S.B.

S.12 Ducts and Draw Wires

The builder must provide all ducts as specified; each duct must contain a draw wire. The number and location of ducts shall be as shown on the drawings and in accordance with E.S.B. requirements.

S.13 Mini-Pillars and Mini-Pillar Vaults

The builder to supply pre-fabricated mini-pillar vaults and covers together with any concrete blocks and concrete required for the installation of mini-pillars.

Provide small concrete base 450 x 450 x 150 mm and haunch around mini pillar; include for all necessary excavation and formwork. The installation shall be in accordance with the latest ESB Code of Practice.

S.14 Nil

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S.15 **Damage to E.S.B. Equipment**

Any damage to E.S.B. equipment whether caused by the builder, contractors or sub-contractors will be the entire responsibility and liability of the builder and he will be required to do such excavation and reinstatement as may be required to repair or replace damaged equipment.

S.16 **Road Crossing Ducts - Revised July 2004**

The road crossing ducts are to be 125mm high-density polythene pipes as clause S.5, surrounded in concrete and buried at a level of one metre below the final road surface. The position of each duct should be marked by the letters "E.S.B." engraved on the road surface at the kerb in letters 150mm high. Before the final surface is laid the ducts should be indicated by two treated marker boards labelled, "E.S.B.", one at each side of the road. In addition a suitable indicator (eg. marked tape) shall be placed the length of the duct at 300mm below finished ground level.

S.17 **Nil**

S.18 **Installation of E.S.B. Cables**

E.S.B. cables will not be laid until footpaths are installed.

TELECOM AND CABLE TELEVISION DISTRIBUTION SYSTEMS

S.19 **Distribution Network**

The distribution system shall be as the Architects layout drawing and in accordance with the requirements of Eircom or cable television provider.

S.20 **Trenches and Ducts**

The standard depth at which ducts shall be buried under concrete or paved surfaces measured from the surface level to the top of the barrel of the duct shall be as follows:- Ducts 100mm, 50mm, 25mm in diameter shall be 450mm under a footway and 750mm under a carriageway.

Where ducts are to be laid in uneven or undulating ground of grass margin, the depth of cover shall be measured from the level of the adjacent paved surface to the top of the barrel of the duct and shall be the same as for ducts laid under paved surfaces.

The bottom of the trench shall be levelled and rammed. In rocky or stony soils, earth, free from stones, shall be spread over the bottom of the trench and rammed to afford a bedding of 75mm in thickness upon which the duct shall be laid.

The lines of ducts shall be kept as straight as possible to allow the body of the ducts to lie even on the bottom of the trench and to facilitate jointing. The earth shall be scooped out at the joint box positions.

S.21 **Joint Boxes**

Footway joint boxes shall be in accordance with the detail drawing and installed as shown. They shall be either approved purpose made prefabricated units or constructed from 100mm solid concrete block side walls; 225 block end walls, each having 100mm deep recess for main cable duct entry; 2 No. 900 x 300 x 75mm reinforced pre-cast concrete lintols; 114mm thick Grade F20 concrete base, dished to form sump with 225mm diameter opening to form soakway; ducts to be built in. (Note: cover and frame fixed by others).

Covers and lids for telecom boxes will be supplied by Eircom. Covers and lids for cable television boxes shall be supplied by the Contractor.

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The necessary allowance shall be made for the proper intake of the ducts to the joint boxes, from footway and carriageway positions so that the duct enters the box at the specified level above the floor of the joint boxes, from any given side.

S.22 **Clearance from other Public Utility Services of Telecom and Cable TV Services**

- (a) In the case where the duct and cable crosses a watermain, a clear vertical distance of at least 150mm clearance must be left between them.
- (b) In the case of the duct and cable being laid parallel with a watermain, a clear horizontal distance of at least 225mm must be left between them.
- (c) Any joint box built in connection with telephone services must be sited so as to provide a minimum of 300mm clearance from the nearest watermain hydrant, valve or other water-works appurtenance.
- (d) Ducts must not be laid through Council manholes; gullies or sewers or in such a manner as to interfere with the use of drainage services.

S.23 **Clearance for ESB Services - High Tension & Low Tension**

- (a) Crossing a High Tension:

A minimum clearance of 300mm between duct and the outer surface of the H.T. cable should be provided. In addition, extra mechanical protection between the two sets of plant at the cross point should be provided, using an APEX Baldwin Tile, 300mm x 175mm x 112 mm, or an equivalent concrete block, to be provided by the ESB.
- (b) Parallels and High Tension:

A minimum separation of 600mm (measured radially if the two plants are at different levels) is required between the P.O. duct and outer surface of the H.T. cable.
- (c) Crossings and Low Tension:

The minimum separating distance is to be 50mm but a greater separation should be afforded wherever possible.
- (d) Parallels and Low Tension:

A minimum distance of 450mm radially should exist in the P.O. ducts and E.S.B. low tension cables running parallel.

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Appendix A: List of References and Standards

Item No.	Clause No.	Reference	Comment
1.	S.4	BS 3506:1969	Specification for unplasticised PVC pipe for industrial use.
2.	S.4	IS 135:1975	Polyethylene pipe type 50.
3.	S.4	IS 370:2007	Colour code for buried plastics piping.

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Appendix B: Amendments list	
Date of Amendment	Amendments
1/05/2014	This section was amended by Barry Sheils and approved by David Byrne, Senior Architect, Fingal County Council.