Digital Design Strategy

[Employer’s Requirements]or[Specification] for the Mechanical, Electrical & Public Health (MEP) Installations

**For Client**

Month 20xx

Tender – Rev \*

|  |  |  |
| --- | --- | --- |
| **ISSUE HISTORY** | | |
| **Issue** | **Date** | **Description** |
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| --- | --- |
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[Ss\_75\_50\_11\_57 Patient to Nurse Call Systems 3](#_Toc15913812)

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# Introduction

## Project Overview, Design Philosophy and Key Aspects of the Brief

## Key MEP Design Strategies

## MEP documentation

This document “MEP Employers Requirements/Specification” (SPEC-100) provides a project-specific description of the MEP engineering services installation. This document forms part of the design information and should be read in conjunction with the Main Contract Preliminaries and all associated documents.

The MEP installations are also described by the following documents:

* SPEC-100 – Project specific description of the MEP installations
* SPEC-200 – Project preliminaries setting out the Contractor’s responsibilities in relation to design, coordination, management and documentation.
* SPEC-300 – Reference specification setting out the required standards for installation, testing and workmanship for the MEP installations.
* Drawings and schedules listed in Appendix A of SPEC 100

## Basis of Tender and Contractor Design Responsibilities

With the exception of the performance specified MEP installations listed in clause 4.2 of SPEC-200, the tender documents for the MEP engineering services include MEP design developed to RIBA Stage 4.

The contractor shall allow for the design responsibilities set out in Section 4 of SPEC-200 within their tender price.

The contractor shall include for the provision of a complete working installation as set out in clause 3.4 of SPEC-200.

Complete in full the pricing documents (Tender Summaries in the following section) and return with tenders.

## BREEAM Requirements

The contractor shall contribute to the BREEAM assessment as described by the Main Contract preliminaries. This includes the provision of both BREEAM evidence and BREEAM compliant installations. See the individual work sections, BREEAM manual and BREEAM pre-assessment (or design stage assessment) for detailed requirements.

# Summary of Tender – Mechanical

The Contractor is to complete the following in full.

|  |  |  |  |
| --- | --- | --- | --- |
| SPEC-200 | MEP Preliminaries Generally | £ |  |
|  | 3.8 Provisional sums (Total of Appendix B) | £ |  |
|  | 3.11 Modelling responsibilities of the Contractor | £ |  |
|  | 4.0 Design Responsibilities | £ |  |
|  | 7.1 Surveys | £ |  |
|  | 7.6 Maintenance of existing services | £ |  |
|  | 11.1 Record Information | £ |  |
|  | 11.2 Operation and Maintenance Manuals | £ |  |
|  | 11.3 Building User Guide | £ |  |
|  | 11.4 Testing and Commissioning - Demonstration | £ |  |
|  | 12.1 Training of employer’s staff | £ |  |
|  | 12.3 Seasonal Commissioning | £ |  |
|  | 12.4 Maintenance during rectification period | £ |  |
|  |  |  |  |
|  | Total of Preliminaries |  | £ |
|  |  |  |  |
| Ac\_10\_10\_25\_00 | Identification, decommissioning and strip out of existing services - Mechanical | £ |  |
| Ss\_25\_00\_00\_00 | Builderswork in connection (BWIC) | £ |  |
| Ss\_50\_20\_00\_00 | Laboratory/Industrial Waste Drainage | £ |  |
| Ss\_50\_30\_02\_00 | Rainwater System | £ |  |
| Ss\_50\_30\_04\_00 | Foul Drainage - Above Ground System | £ |  |
| Ss\_50\_30\_08\_00 | Foul Drainage - Below Ground System | £ |  |
| Ss\_50\_30\_85\_00 | Sewage Pumping | £ |  |
| Ss\_50\_40\_00\_00 | Refuse Chutes | £ |  |
| Ss\_55\_20\_34\_57 | Natural Gas | £ |  |
| Ss\_55\_30\_96\_25 | Dry Risers | £ |  |
| Ss\_55\_30\_96\_30 | Fire Hydrants | £ |  |
| Ss\_55\_30\_96\_85 | Sprinklers | £ |  |
| Ss\_55\_30\_96\_97 | Wet Risers | £ |  |
| Ss\_55\_70\_38\_15 | Cold water | £ |  |
| Ss\_55\_70\_38\_20 | Hot water | £ |  |
| Ss\_55\_70\_42\_20 | Irrigation Systems | £ |  |
| Ss\_55\_70\_97\_35 | Water Reclamation – Grey Water | £ |  |
| Ss\_55\_70\_97\_70 | Water Reclamation – Rainwater | £ |  |
| Ss\_55\_70\_98\_85 | Swimming Pool Water Treatment | £ |  |
| Ss\_60\_40\_15\_40 | Combined Heat and Power | £ |  |
| Ss\_60\_40\_17\_12 | Chilled water distribution | £ |  |
| Ss\_60\_40\_17\_94 | VRF systems | £ |  |
| Ss\_60\_40\_36\_00 | Heat Pumps | £ |  |
| Ss\_60\_40\_37\_21 | Gas Fired Boilers | £ |  |
| Ss\_60\_40\_37\_48 | Electric Heating Systems | £ |  |
| Ss\_60\_40\_37\_48 | Low Temperature Hot Water Heating System | £ |  |
| Ss\_60\_40\_37\_81 | Solar Collectors | £ |  |
| Pr\_60\_60\_13\_00 | Central Chiller Plant | £ |  |
| Pr\_60\_60\_08\_81 | Solid Fuel Boiler - Biomass | £ |  |
| Ss\_65\_40\_25\_00 | Dust Collection | £ |  |
| Ss\_65\_40\_32\_00 | Fume Extract | £ |  |
| Ss\_65\_40\_33\_00 | General ventilation | £ |  |
| Ss\_65\_40\_33\_45 | Kitchen Ventilation | £ |  |
| Ss\_65\_40\_33\_90 | Toilet Ventilation | £ |  |
| Ss\_65\_40\_80\_00 | Smoke Extraction/Smoke Control | £ |  |
| Ss\_65\_40\_94\_00 | Car park Ventilation | £ |  |
| Ss\_75\_70\_54\_10 | Central control/Building management | £ |  |
|  |  |  |  |
|  | Total of Work Sections |  | £ |

Signed ..........................................................................................

For & on behalf of ..........................................................................................

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# Summary of Tender – Electrical

The Contractor is to complete the following in full.

|  |  |  |  |
| --- | --- | --- | --- |
| SPEC-200 | MEP Preliminaries Generally | £ |  |
|  | 3.8 Provisional sums (Total of Appendix B) | £ |  |
|  | 3.11 Modelling responsibilities of the Contractor | £ |  |
|  | 4.0 Design Responsibilities | £ |  |
|  | 7.1 Surveys | £ |  |
|  | 7.6 Maintenance of existing services | £ |  |
|  | 11.1 Record Information | £ |  |
|  | 11.2 Operation and Maintenance Manuals | £ |  |
|  | 11.3 Building User Guide | £ |  |
|  | 11.4 Testing and Commissioning - Demonstration | £ |  |
|  | 12.1 Training of employer’s staff | £ |  |
|  | 12.3 Seasonal Commissioning | £ |  |
|  | 12.4 Maintenance during rectification period | £ |  |
|  |  |  |  |
|  | Total of Preliminaries |  | £ |
|  |  |  |  |
| Ac\_10\_10\_25\_00 | Identification, decommissioning and strip out of existing services – Electrical | £ |  |
| Ss\_25\_00\_00\_00 | Builderswork in connection (BWIC) | £ |  |
| Ss\_70\_10\_30\_72 | Electricity Generation – Generator | £ |  |
| Ss\_70\_10\_70\_35 | Electricity Generation – PV | £ |  |
| Ss\_70\_10\_70\_82 | Electricity Generation – Small-Scale Wind | £ |  |
| Ss\_70\_30\_35\_00 | HV Supply / Public Utility Supply | £ |  |
| Ss\_70\_30\_45\_00 | LV Supply / Public Utility Supply | £ |  |
| Ss\_70\_30\_45\_45 | LV Distribution | £ |  |
| Ss\_70\_30\_80\_00 | Small Power Systems | £ |  |
| Ss\_70\_80\_25\_00 | Street/Area/Flood Lighting | £ |  |
| Ss\_70\_80\_33\_00 | General Lighting | £ |  |
| Ss\_70\_80\_33\_12 | Emergency Lighting | £ |  |
| Ss\_75\_10\_21\_21 | Structured Cabling System | £ |  |
| Ss\_75\_10\_21\_88 | Telecommunications | £ |  |
| Ss\_75\_10\_46\_05 | Audio-Frequency Induction-Loop Systems | £ |  |
| Ss\_75\_10\_68\_68 | Public Address Systems | £ |  |
| Ss\_75\_10\_70\_70 | Radio Distribution Systems | £ |  |
| Ss\_75\_10\_70\_88 | Television Distribution Systems | £ |  |
| Ss\_75\_40\_02\_00 | Access Control | £ |  |
| Ss\_75\_40\_53\_86 | Surveillance Systems | £ |  |
| Ss\_75\_40\_75\_40 | Security Detection and Alarm | £ |  |
| Ss\_75\_50\_11\_05 | Accessible WC Alarm Systems | £ |  |
| Ss\_75\_50\_11\_27 | Disabled Refuge Systems | £ |  |
| Ss\_75\_50\_11\_57 | Patient to Nurse Call Systems | £ |  |
| Ss\_75\_50\_11\_95 | Voice alarm systems | £ |  |
| Ss\_75\_50\_28\_29 | Fire Detection and Alarm | £ |  |
| Ss\_75\_80\_45\_25 | Earthing, Bonding, EMC and Surge Protection | £ |  |
| Ss\_75\_80\_45\_45 | Lightning Protection | £ |  |
|  |  |  |  |
|  | Total of Work Sections |  | £ |

Signed ..........................................................................................

For & on behalf of ..........................................................................................

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# Ss\_50\_20\_00\_00 Laboratory / Industrial Waste Drainage

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * H - Drainage and waste disposal   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide G: Public Health and Plumbing Engineering :2014   Water Regulations Advisory Scheme (WRAS)   * The Water Regulations Guide * Information and guidance notes | | |
| British Standards | EN 12056-1 | 2000 | Gravity drainage systems inside buildings. General and performance requirements |
|  | EN 12056-2 | 2000 | Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation |
|  | EN 12056-5 | 2000 | Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use |
|  | BS 8000-13 | 1989 | Workmanship on building sites. Code of practice for above ground drainage and sanitary appliances |
|  | BS 6465 | Various | Sanitary Installations |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Thames Water |
| Compliance in accordance with | BS EN 12056-1 System Type III |
| NHBC | Part 8 ‐ Services and internal finishes |
| All Manufacturer’s recommendations and instructions | In particular   * Specified above ground pipework manufacturer * Gully manufacturer |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_50\_30\_02\_00 Rainwater System

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * H - Drainage and waste disposal   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide G: Public Health and Plumbing Engineering :2014 * CIBSE Knowledge Series 11: Green Roofs | | |
| British Standards | EN 12056-1 | 2000 | Gravity drainage systems inside buildings. General and performance requirements |
|  | EN 12056-3 | 2000 | Gravity drainage systems inside buildings. Roof drainage, layout and calculation |
|  | EN 12056-5 | 2000 | Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use |
|  | BS 8000-13 | 2014 | Workmanship on building sites. Code of practice for above ground drainage and sanitary appliances |
|  | BS 5422 | 2009 | Method for specifying thermal insulation |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Thames Water * Local authority |
| NHBC | Part 7.1 – Flat roof and balconies  Part 8 ‐ Services and internal finishes |
| Rainfall intensity | 0.056 l/s/m2 |
| Storm event | 2 min |
| Return period | 50 yrs |
| All Manufacturer’s recommendations and instructions | In particular   * Specified above ground pipework manufacturer * Specified insulation manufacturer |

## SYSTEM DESCRIPTION

### General

### Rainwater Drainage Strategy

### Installation & Workmanship

### Materials

## TESTING & COMMISSIONING

Carry out testing and commissioning in line with Testing & Commissioning schedule A[64]500.

## SYSTEM DRAWINGS / SCHEMATICS

* R(1-) series drawings – Drainage layouts and details
* Y(5-)500 – Pipework schedule
* Architects roof drawings, details and building sections
* Civil engineers drawings for below ground drainage layouts

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_50\_30\_04\_00 Foul Drainage Above Ground

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * H - Drainage and waste disposal   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide G: Public Health and Plumbing Engineering :2014   Water Regulations Advisory Scheme (WRAS)   * The Water Regulations Guide * Information and guidance notes | | |
| British Standards | EN 12056-1 | 2000 | Gravity drainage systems inside buildings. General and performance requirements |
|  | EN 12056-2 | 2000 | Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation |
|  | EN 12056-5 | 2000 | Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use |
|  | BS 8000-13 | 1989 | Workmanship on building sites. Code of practice for above ground drainage and sanitary appliances |
|  | BS 6465 | Various | Sanitary Installations |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Thames Water |
| Compliance in accordance with | BS EN 12056-1 System Type III |
| NHBC | Part 8 ‐ Services and internal finishes |
| All Manufacturer’s recommendations and instructions | In particular   * Specified above ground pipework manufacturer * Gully manufacturer * Fan coil unit manufacturer with regards to condensate drainage |

## SYSTEM DESCRIPTION

### General

### Above Ground Foul Drainage Strategy

### Installation & Workmanship

### Materials

## R11.4 TESTING & COMMISSIONING

Carry out testing and commissioning in line with Testing & Commissioning schedule A[64]500.

## SYSTEM DRAWINGS / SCHEMATICS

* R(1-) series drawings – Drainage layouts and details
* Y(5-)500 – Pipework schedule
* See T(--)500 and U(--)500 for specification of boilers, fan coils units and MVHRs for condensate requirements
* Architects drawings and sections
* Civil engineers drawings for below ground drainage layouts

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_50\_30\_08\_00 Below Ground Drainage

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * H - Drainage and waste disposal   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide G: Public Health and Plumbing Engineering :2014   Water Regulations Advisory Scheme (WRAS)   * The Water Regulations Guide * Information and guidance notes | | |
| British Standards | EN 12056-1 | 2000 | Gravity drainage systems inside buildings. General and performance requirements |
|  | EN 12056-2 | 2000 | Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation |
|  | EN 12056-5 | 2000 | Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use |
|  | BS 8000-13 | 1989 | Workmanship on building sites. Code of practice for above ground drainage and sanitary appliances |
|  | BS EN 476 | 2011 | General requirements for components used in drains and sewers |
|  | BS 6465 | Various | Sanitary Installations |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Thames Water |
| Compliance in accordance with | BS EN 12056-1 System Type III |
| NHBC | Part 8 ‐ Services and internal finishes |
| All Manufacturer’s recommendations and instructions | In particular   * Specified above ground pipework manufacturer * Access chamber manufacturer * Gully manufacturer |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_50\_30\_85\_00 Sewage Pumping

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part H Drainage * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE G Guide | | |
| Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG 12/2011) * Commissioning of Pipe Work Systems (AG 20/95) | | |
| British Standards | BS EN 12056-4 | 2000 | Gravity drainage systems inside buildings. Wastewater lifting plants. Layout and calculation |
|  | EN 12056-1 | 2000 | Gravity drainage systems inside buildings. General and performance requirements |
|  | EN 12056-2 | 2000 | Gravity drainage systems inside buildings. Sanitary pipework, layout and calculation |
|  | EN 12056-5 | 2000 | Gravity drainage systems inside buildings. Installation and testing, instructions for operation, maintenance and use |
|  | BS 8000-13 | 1989 | Workmanship on building sites. Code of practice for above ground drainage and sanitary appliances |
|  | BS 6465 | Various | Sanitary Installations |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Thames Water |
| Compliance in accordance with | BS EN 12056-1 System Type III |
| NHBC | Part 8 ‐ Services and internal finishes |
| All Manufacturer’s recommendations and instructions | In particular   * Specified above ground pipework manufacturer * Pumping station manufacturer * Fan coil unit manufacturer with regards to condensate drainage |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_50\_40\_00\_00 Refuse Chutes

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part H Drainage and Waste Disposal * Part G Sanitation, Hot Water Safety and Water Efficiency   The Scottish Building Standards   * Section 3 (Environment)   WRAS Water Regulations  Thames Water Requirements | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE G Guide | | |
| British Standards | BS EN 476 | 2011 | General requirements for components used in drains and sewers.  *For fire and smoke performance* |
|  | BS 1703 | 2005 | Refuse chutes and hoppers. Specification |
|  | BS 5588-12 | 2014 | Fire precautions in the design, construction and use of buildings. Managing fire safety |
|  | BS 5906 | 2005 | Waste Management in Buildings |

### Project Specific Requirements

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_20\_34\_57 Natural Gas

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  RegulationsThe Gas Safety (installations and use) Regulations (1998) | | |
| Health Safety Security Environment (HSSE) | Health & Safety Commission Gas safety ‐ Approved Code of Practice and Guidance (2011) | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part J 2010 (Heat producing appliances)   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) | | |
| Industry standards | IGE Gas Measurement (GM) and General Procedures Regulations:   * IGE/TD/4 PE and steel gas services and service pipework * IGE/UP/2 Installation pipework on industrial and commercial premises * IGE/GM/4 Flow metering practices; inlet pressure exceeding 38 bar and not exceeding 100 bar * IGE/GM/5 Electronic gas meter volume conversion systems * IGE/GM/6 Specification for low pressure diaphragm & rotary displacement meter installations with badged meter capacities exceeding 6m3/h (212ft3/h) but not exceeding 1076m3/h (38000ft3/h) * IGE/GM/7A Electrical connections for gas metering equipment * IGE/GM/7B Hazardous area classification for gas metering equipment * IGE/GM/8 Non domestic gas meter installations; flow rate exceeding 6 m3h-1 and inlet pressure not exceeding 38 bar * IGEM/UP/19 Design and application of interlocking devices and associated systems used with gas appliance installations in commercial catering establishments   Other relevant documents   * Gas Safe good practice recommendations * British Gas Guide to the safe use of gas in buildings * Gas Safe Technical Bulletin TB008 * Pipelines Safety Regulations 1996 - Design, construction and installation of gas service pipes, L81. | | |
| British Standards | BS 6400-1 | :2006 | Specification for installation, exchange, relocation and removal of gas meters with a maximum capacity not exceeding 6 m3/h. Low pressure (2nd family gases) |
|  | PD CEN/TR 16061 | :2010 | Smart gas meters |
|  | BS EN 1775 | :2007 | Gas supply - gas pipework for buildings - maximum operating pressure less than or equal to 5 bar - functional recommendations |
|  | BS EN 15001-1 | :2009 | Gas infrastructure - gas installation pipework with an operating pressure greater than 0,5 bar for industrial installations and greater than 5 bar for industrial and non-industrial installations. Detailed functional requirements for design, materials, construction, inspection and testing |
|  | BS 6173 | :2009 | Installation of gas fired catering appliances for use in all types of catering establishments |
|  | BS EN 12279 | :2000 | Gas pressure regulating installations on service lines |
|  | BS EN 13611 | :2015 | Safety and control devices for gas burners and gas-burning appliances - general |
|  | BS 6891 | 2015 | Specification for the installation and maintenance of low pressure gas installation pipework of up to 35 mm (R1¼) on premises |

### Project Specific Requirements

|  |  |
| --- | --- |
| Utilities | Requirements of   * Gas Network Operator – National Grid Plc. * Nominated Gas Supplier – TBC by CA * Meter operator – TBC by Gas Supplier |
| Gas pressure immediately after new metered connection | 21mbar (Contractor to confirm with GNO/meter operator). |
| System pressure drop at full load – from meter to appliances | <1mbar pressure drop. |
| Assumed Gas Calorific Value | Minimum 37.5 MJ/m3 |
| Correction factor for temperature & atmospheric conditions | 1.02264 |

## SYSTEM DESCRIPTION

### General

### Incoming Gas Supply

### Distribution Strategy

### Installation & Workmanship

### Materials

## S32.4 TESTING & COMMISSIONING

Carry out testing and commissioning in line with Max Fordham Testing and Commissioning schedule

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_30\_96\_25 Dry Risers

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part B Fire Safety   The Scottish Building Standards   * Section 2 (Fire) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE E guide * CIBSE G guide | | |
| British Standards | BS 9990 | 2015 | Code of practice for non-automatic fire-fighting systems in buildings. |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings |
|  | BS 336 | 2010 | Specification for fire hose couplings and ancillary equipment |
|  | BS 5041-2 | 1987 | Specification for fire hydrant systems equipment. Specification for landing valves for dry risers |
|  | BS 5041-3 | 1975 | Specification for fire hydrant systems equipment. Specification for inlet breechings for dry riser inlets |
|  | BS 5041-4 | 1975 | Fire hydrant systems equipment. Boxes for landing valves for dry risers |
|  | BS 5041-5 | 1974 | Specification for fire hydrant systems equipment. Specification for boxes for foam inlets and dry riser inlets |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_30\_96\_30 Fire Hydrants

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part B Fire Safety   The Scottish Building Standards   * Section 2 (Fire) | | |
| Industry standards |  | | |
| British Standards | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings |
|  | BS 9990 | 2015 | Code of practice for non-automatic fire-fighting systems in buildings. |
|  | BS 750 | 2012 | Specification for underground fire hydrants and surface box frames and covers. |
|  | BS EN 14384 | 2005 | Pillar fire hydrants |
|  | BS EN 14339 | 2005 | Underground fire hydrants |
|  | BS 3251 | 1976 | Indicator plates for fire hydrants and emergency water supplies |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_30\_96\_85 Sprinklers

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part B Fire Safety   The Scottish Building Standards   * Section 2 (Fire) | | |
| Industry standards | NFPA 13 | 2016 | Standard for the installation of sprinkler systems |
|  | CIBSE TM13 and the HSE’s Approved Code of Practice L8. |  | HSE’s Approved Code of Practice. – Minimise risk of Legionella. Design and install to current CIBSE and HSE guidelines on legionella control |
| British Standards | BS 9251 | 2014 | Sprinkler systems for residential and domestic occupancies (including all standards referred to therein) |
|  | BS 9252 | 2011 | Components for residential sprinkler systems. Specification and test methods for residential sprinklers |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings |
|  | BS EN 12845 | 2015 | Fixed firefighting systems - automatic sprinkler systems - design, installation and maintenance |
|  | BS EN 12259-1 | 1999 | Fixed firefighting systems. Components for sprinkler and water spray systems. Sprinklers |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_30\_96\_97 Wet Risers

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part B Fire Safety   The Scottish Building Standards   * Section 2 (Fire) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE E guide * CIBSE G guide | | |
| Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG12/2011) * Commissioning Water Systems (BG 2/2010) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) | | |
| British Standards | BS 9990 | 2015 | Code of practice for non-automatic fire-fighting systems in buildings. |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings |
|  | BS 5041-1 | 1987 | Specification for fire hydrant systems equipment. Specification for landing valves for wet risers |
|  | BS 336 | 2010 | Specification for fire hose couplings and ancillary equipment |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_38\_15 Cold Water

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Water Supply (Water Fittings) Regulations 1999  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK throughthe Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * G 2010 (Sanitation, Hot Water Safety and Water Efficiency) * H - Drainage and waste disposal * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * The Water Efficiency Calculator for new dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) * Section 6 (Energy)   Thames Water Requirements | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide C: Reference Data * CIBSE Guide G: Public Health and Plumbing Engineering * Commissioning Code W: Water Distribution Systems * TM 13: Minimising the Risk of Legionnaires’ Disease   Building Services Research and Information Association (BSRIA)   * Legionnaire's Disease - Operation and Maintenance Log Book BG 58/2015 * Legionnaires' Disease ‐ Risk assessment BG 57/2015 * Cold Water Storage Tanks TN 13/98   Water Regulations Advisory Scheme (WRAS)   * The Water Regulations Guide * Information and guidance notes   Plumbing Engineering Services Design Guide  HSE ACoP L8 - Legionnaires' disease. The control of Legionella bacteria in water systems. Approved Code of Practice and guidance. 3rd edition (2012 reprint) | | |
| British Standards | BS EN  806 – all parts | Varies | Specifications for installations inside buildings conveying water for human consumption - All relevant parts |
|  | BS 8558 | 2015 | Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. Complementary guidance to BS EN 806 |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |

### Project Specific

|  |  |
| --- | --- |
| Utilities | Requirements of water supply company |
| Design flow rates and volumes of appliances | Design flow rates and volumes of appliances:  The following are suggested flow rates and volumes which would meet the 105l/person/day requirement:   * Dual flush WC (6 litre / 3 litre); * Max 3.5 litre/min wash hand basin taps; * Max 8 litre/m shower; * Max 171 litre capacity bath; * Max 8 litre/min kitchen taps; * Dishwasher with 1.3 litre/place setting (where provided); * Washing machine with 7 litre/kg dry load (where provided). * Cleaner’s sink tap flow rate  5 litres/minute   See architect’s information for the specification of Brassware, sanitary ware and white goods appliances (where provided). |
| Assumed pressure available from the incoming main | 1.0 bar |
| Required minimum pressure at all hot and cold outlets | 0.5 bar (or greater to meet requirements of individual appliances & outlets) |
| Required maximum pressure differential between adjacent hot and cold outlets | 0.2 bar |
| Maximum temperature for stored water, and water held within distribution system | 20 deg C |
| Maximum water velocity within pipework: | As BS806 part 3   * 2,0 m/s for header pipes, rising pipes, floor service pipes. * 4,0 m/s; connection pipes to one fitting (dead legs). |
| Pipework pressure loss | Select pipe sizes to ensure maximum velocities are not exceeded, to avoid water hammer, and to ensure adequate pressures are available at outlets. |
| NHBC | Part 8 ‐ Services and internal finishes |
| All Manufacturer’s recommendations and instructions | In particular   * Booster set installation * Tenant Valve Assembly * Hydraulic Interface Unit (HIU) design guide |

## SYSTEM DESCRIPTION

### General

### Incoming Mains Water

### Distribution Strategy

### Cold Water Storage Tank

### Packaged Cold Water Pressure Booster Set(s)

### **Cold Water Isolation Strategy**

### **Cold Water Metering Strategy**

### **Access for Maintenance & Repair**

### Installation & Workmanship

### Materials

### Testing & Commissioning

Carry out testing and commissioning in line with Testing & Commissioning schedule A[64]500.

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

* Incoming services (water) layout(s)
* Incoming services (water) incoming service / penetration detail
* Water services plantroom layout & section(s)
* Building Cold Water Schematic
* S-series water distribution layouts
* Schedule of Pipework
* Schedule of Valves

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_38\_20 Hot Water

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Water Supply (Water Fittings) Regulations 1999  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK throughthe Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * G 2010 (Sanitation, Hot Water Safety and Water Efficiency) * H - Drainage and waste disposal * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * The Water Efficiency Calculator for new dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) * Section 6 (Energy)   Thames Water Requirements | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide C: Reference Data * CIBSE Guide G: Public Health and Plumbing Engineering * Commissioning Code W: Water Distribution Systems * TM 13: Minimising the Risk of Legionnaires’ Disease   Building Services Research and Information Association (BSRIA)   * Variable flow Water Systems ‐ Design, installation and commissioning guidance AG 16/2002 * Commissioning Water Systems BG 2/2010 * Legionnaire's Disease - Operation and Maintenance Log Book BG 58/2015 * Legionnaires' Disease ‐ Risk assessment BG 57/2015 * Cold Water Storage Tanks TN 13/98   Water Regulations Advisory Scheme (WRAS)   * The Water Regulations Guide * Information and guidance notes   Plumbing Engineering Services Design Guide  HSE ACoP L8 - Legionnaires' disease. The control of Legionella bacteria in water systems. Approved Code of Practice and guidance. 3rd edition (2012 reprint) | | |
| British Standards | BS EN  806 – all parts | Varies | Specifications for installations inside buildings conveying water for human consumption - All relevant parts |
|  | BS 8558 | 2015 | Guide to the design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. Complementary guidance to BS EN 806 |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |

### Project Specific

|  |  |  |
| --- | --- | --- |
| Utilities | Requirements of water supply company | |
| HIU Domestic Hot Water | Load | \*\* kW minimum |
|  | LTHW flow | 70oC (60oC summer) |
|  | LTHW return | 20oC |
|  | BCWS | 10oC |
|  | DHW | 50oC |
| Adjustable TMV setting temperatures | Baths | 40oC |
|  | Showers | 40oC |
|  | Wash Hand Basin | 40oC |
|  | Kitchen Sinks | 50oC |
| Design flow rates and volumes of appliances | Design flow rates and volumes of appliances:  The following are suggested flow rates and volumes which would meet the 105l/person/day requirement:   * Dual flush WC (6 litre / 3 litre); * Max 3.5 litre/min wash hand basin taps; * Max 8 litre/m shower; * Max 171 litre capacity bath; * Max 8 litre/min kitchen taps; * Dishwasher with 1.3 litre/place setting (where provided); * Washing machine with 7 litre/kg dry load (where provided). * Cleaner’s sink tap flow rate  5 litres/minute   See architect’s information for the specification of Brassware, sanitary ware and white goods appliances (where provided). | |
| Assumed pressure available from the incoming main | 1.0 bar | |
| Required minimum pressure at all hot and cold outlets | 0.5 bar (or greater to meet requirements of individual appliances & outlets) | |
| Required maximum pressure differential between adjacent hot and cold outlets | 0.2 bar | |
| Maximum temperature for stored water, and water held within distribution system | 20 deg C | |
| Maximum water velocity within pipework: | As BS806 part 3   * 2,0 m/s for header pipes, rising pipes, floor service pipes. * 4,0 m/s; connection pipes to one fitting (dead legs). | |
| Pipework pressure loss | Select pipe sizes to ensure maximum velocities are not exceeded, to avoid water hammer, and to ensure adequate pressures are available at outlets. | |
| NHBC | Part 8 ‐ Services and internal finishes | |
| All Manufacturer’s recommendations and instructions | In particular   * Booster set installation * Tenant Valve Assembly * Hydraulic Interface Unit (HIU) design guide | |

## SYSTEM DESCRIPTION

### General

## TESTING & COMMISSIONING

Carry out testing and commissioning as per Testing & Commissioning Schedule A[64]500.

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

ADDITIONAL INFORMATION TO BE ADDED BY THE DESIGNER

* Incoming services (water) layout(s)
* Incoming services (water) incoming service / penetration detail
* Water services plantroom layout & section(s)
* Building Water Schematic
* S-series water distribution layouts
* Schedule of Pipework
* Schedule of Valves

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_42\_00 Irrigation Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

## SYSTEM DESCRIPTION

### Industry Standards

|  |  |  |
| --- | --- | --- |
| Statutory Acts | The Building Regulations  The Pressure Equipment Directive (PED) 97/23/EC  Water Supply (Water Fittings) Regulations 1999  The Water Supply (Water Fittings) (Scotland) Byelaws 2014 | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part H Drainage * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE G Guide | |
| Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG 12/2011) * Commissioning Water Systems BG 2/2010 | |
| British Standards | BS EN 806 | Specifications for installations inside buildings conveying water for human consumption |

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_97\_35 Water Reclamation – Grey Water

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Water Supply (Water Fittings) Regulations 1999  The Water Supply (Water Fittings) (Scotland) Byelaws 2014 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part H Drainage * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE G Guide * TM13: Minimising the Risk of Legionnaires Disease * KS01: Reclaimed Water (KS1) | | |
| Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG 12/2011) * Commissioning Water Systems BG 2/2010 * Water Reclamation Guidance - Design and construction of systems using grey water (TN 6/2002) | | |
| Construction Industry Research and Information Association   * c539 - Rainwater and Greywater Use in Buildings - Best Practice Guidance | | |
| Water Regulations Advisory Scheme   * WRAS Guidance Note No 9-02-04 "Information about Installing, Modifying or Maintaining Reclaimed Water Systems" * WRAS Guidance Note No 9-02-05 "Marking and Identification of Pipework for Reclaimed (Grey water) Systems" | | |
| British Standards | BS 8525 – all parts | Varies | Greywater Systems |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_97\_70 Water Reclamation – Rainwater

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Water Supply (Water Fittings) Regulations 1999  The Water Supply (Water Fittings) (Scotland) Byelaws 2014 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part H Drainage * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE G Guide * TM13: Minimising the Risk of Legionnaires Disease * KS01: Reclaimed Water (KS1) | | |
| Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG 12/2011) * Commissioning Water Systems BG 2/2010 * Water Reclamation Guidance - Design and construction of systems using grey water (TN 6/2002) | | |
| Construction Industry Research and Information Association   * c539 - Rainwater and Greywater Use in Buildings - Best Practice Guidance | | |
| Water Regulations Advisory Scheme   * WRAS Guidance Note No 9-02-04 "Information about Installing, Modifying or Maintaining Reclaimed Water Systems" * WRAS Guidance Note No 9-02-05 "Marking and Identification of Pipework for Reclaimed (Grey water) Systems" | | |
| British Standards | BS 8515 | 2009+A1:2013 | Rainwater Harvesting Systems. Code of Practice |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_55\_70\_98\_85 Swimming Pool Water Treatment

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Water Supply (Water Fittings) Regulations 1999  The Water Supply (Water Fittings) (Scotland) Byelaws 2014 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 3 (Environment) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide C: Reference Data * CIBSE Guide G: Public Health and Plumbing Engineering * Commissioning Code W: Water Distribution Systems * TM 13: Minimising the Risk of Legionnaires’ Disease | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Public Health Engineering - A quality control framework for public health engineers BG 2/2006 * Commissioning Water Systems BG 2/2010 * Guidance and Specification for Water Risk Assessment FMS 4/99 * Legionnaire's Disease - Operation and Maintenance Log Book BG 58/2015 * Legionnaires' Disease ‐ Risk assessment BG 57/2015 | | |
| Health and Safety Executive   * Control of Substances Hazardous to Health (COSHH) * HSE ACoP L8 - Legionnaires' disease. The control of Legionella bacteria in water systems. Approved Code of Practice and guidance. 3rd edition (2012 reprint) | | |
| Pool Water Treatment Advisory Group   * Swimming Pool Water – Treatment and Quality Standards for Pools and Spas * Pathogen Control Code of Practice | | |
| British Standards | BS EN 13451-1 | 2011+ A1:2016 | Swimming pool equipment. General safety requirements and test methods |
|  | BS EN 13451-2 | 2015 | Swimming pool equipment. Additional specific safety requirements and test methods for ladders, stepladders and handle bends |
|  | BS EN 13451-3 | 2011 | Swimming pool equipment. Additional specific safety requirements and test methods for inlets and outlets and water/air based water leisure features |
|  | BS EN 16713-1 | 2016 | Domestic swimming pools. Water systems. Filtration systems. Requirements and test methods |
|  | BS EN 16713-2 | 2016 | Domestic swimming pools. Water systems. Circulation systems. Requirements and test methods |
|  | BS EN 16713-3 | 2016 | Domestic swimming pools. Water systems. Water treatment. Requirements |
|  | BS EN 15288-1 | 2008+ A1:2010 | Swimming Pools. Safety requirements for design |
|  | BS EN 15288-2 | 2008 | Swimming Pools. Safety requirements for operation |
|  | BS EN 15031 | 2013 | Chemicals used for treatment of swimming pool water. Aluminium based coagulants |
|  | BS EN 15077 | 2013 | Chemicals used for treatment of swimming pool water. Sodium hypochlorite |
|  | BS EN 15514 | 2014 | Chemicals used for treatment of swimming pool water. Hydrochloric acid |
|  | BS EN 15798 | 2010 | Products used for the treatment of swimming pool water. Filter media |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_15\_40 Combined Heat and Power Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993  Clean Air Act Memorandum  The Gas Safety (Installation and Use) Regulations 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part J Combustion Appliances & Fuel Storage Systems * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy)   Local Authority air quality requirements/guidance | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code W 2010 * CIBSE B guide * AM12 Combined Heat and Power for Buildings * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems * KS14 Energy Efficient Heating   Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG12/2011) * CHP for Existing Buildings. Guidance on design and installation (BG 2/2007) * Commissioning Water Systems (BG 2/2010) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG50/2013). * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG16/2002) * Selection of Control Valves in Variable Flow Systems (BG 51/2014)   THE CHPQA Standard | | |
| British Standards | BS 5440-2 | 2009 | Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases). Specification for the installation and maintenance of ventilation provision for gas appliances |
|  | BS 5546 | 2010 | Specification for installation and maintenance of gas-fired water-heating appliances of rated input not exceeding 70 kW net |
|  | BS 5854 | 1980 | Code of practice for flues and flue structures in buildings |
|  | BS 6880 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW |
|  | BS 8660-1 | 2011 | Gas-fired micro-cogeneration appliances of rated thermal input not exceeding 70 kW net. Specification for selection, installation, inspection, commissioning, servicing and maintenance of Stirling engine micro-cogeneration appliances |
|  | BS EN 12828 | 2012 | Heating systems in buildings - Design for water based heating systems |
|  | BS EN 12831 | 2003 | Heating systems in buildings - Method for calculation of the design heating load |
|  | BS EN 14336 | 2004 | Heating systems in buildings Installation and commissioning of water based heating systems |
|  | BS EN 1443 | 2003 | Chimneys - General requirements |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_17\_12 Chilled Water

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code W 2010 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems * KS14 Energy Efficient Heating   Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Water Systems (BG 2/2010) * Commissioning Management (AG 5/2002) * Energy Efficient Pumping Systems (BG 12/2011) * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG 16/2002) * Commissioning of Pipe Work Systems (AG 20/95) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG 50/2013). * Selection of Control Valves in Variable Flow Systems (BG 51/2014) | | |
| British Standards | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 7074-3 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for chilled and condenser systems |
|  | BS EN 378 | 2016 | Refrigerating systems and heat pumps. Safety and environmental requirements |
|  | BS EN 14511 | 2013 | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_60\_55\_96\_00 CLEANING AND CHEMICAL TREATMENT
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_17\_94 VRF System

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code R 2002 * CIBSE A guide * CIBSE B guide * CIBSE C guide * KS13 Refrigeration * TM44 Inspection of Air Conditioning Systems   Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * VRF based air conditioning systems - performance, installation and operation notes (TN10/97) * Commissioning of Pipe Work Systems (AG 20/95) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) | | |
| British Standards | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 7074-3 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for chilled and condenser systems |
|  | BS EN 378 | 2016 | Refrigerating systems and heat pumps. Safety and environmental requirements |
|  | BS EN 14511 | 2013 | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION – MECHANICAL
* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_36\_00 Heat Pumps

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code W 2010 * CIBSE B guide * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems   Building Services Research and Information Association (BSRIA)   * Commissioning Water Systems (BG 2/2010) * Heat Pumps - A Guidance document for designers (BG 7/2009) * Energy Efficient Pumping Systems (BG12/2011) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG 50/2013) * Selection of Control Valves in Variable Flow Systems (BG 51/2014) * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG16/2002) | | |
| British Standards | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 6880-1 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW. Fundamental and design considerations |
|  | BS 6880-2 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW. Selection of equipment |
|  | BS 6880-3 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45 kW. Installation, commissioning and maintenance |
|  | BS 7074-1 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for domestic heating and hot water supply |
|  | BS 7074-2 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for low and medium temperature hot water heating systems |
|  | BS 7074-3 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for chilled and condenser systems |
|  | BS EN 378 | 2016 | Refrigerating systems and heat pumps. Safety and environmental requirements |
|  | BS EN 12828 | 2012 | Heating systems in buildings. Design for water-based heating systems |
|  | BS EN 12831 | 2003 | Heating systems in buildings. Method for calculation of the design heat load |
|  | BS EN 14336 | 2004 | Heating systems in buildings. Installation and commissioning of water based heating systems |
|  | BS EN 14511 | 2013 | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_60\_55\_96\_00 CLEANING AND CHEMICAL TREATMENT
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_37\_21 Gas Boilers

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993  Clean Air Act Memorandum  The Gas Safety (Installation and Use) Regulations 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part J Combustion Appliances & Fuel Storage Systems * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy)   Local Authority air quality requirements/guidance | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code B 2002 * CIBSE B guide * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems   Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG12/2011) * Commissioning Water Systems (BG 2/2010) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG50/2013). * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG16/2002) * Selection of Control Valves in Variable Flow Systems (BG 51/2014) | | |
| British Standards | BS 5440-2 | 2009 | Flueing and ventilation for gas appliances of rated input not exceeding 70 kW net (1st, 2nd and 3rd family gases). Specification for the installation and maintenance of ventilation provision for gas appliances |
|  | BS 5546 | 2010 | Specification for installation and maintenance of gas-fired water-heating appliances of rated input not exceeding 70 kW net |
|  | BS 5854 | 1980 | Code of practice for flues and flue structures in buildings |
|  | BS 6644 | 2011 | Specification for the installation and maintenance of gas-fired hot water boilers of rated inputs between 70 kW (net) and 1.8 MW (net) (2nd and 3rd family gases) |
|  | BS 6798 | 2009 | Specification for installation and maintenance of gas-fired boilers of rated input not exceeding 70 kW net |
|  | BS 6880 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW |
|  | BS EN 12828 | 2012 | Heating systems in buildings - Design for water based heating systems |
|  | BS EN 12831 | 2003 | Heating systems in buildings - Method for calculation of the design heating load |
|  | BS EN 14336 | 2004 | Heating systems in buildings Installation and commissioning of water based heating systems |
|  | BS EN 1443 | 2003 | Chimneys - General requirements |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_60\_55\_96\_00 CLEANING AND CHEMICAL TREATMENT
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_37\_26 Electric Heating Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  The Electricity at Work Regulations 1989 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part P Electrical Safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  BS 7671 - IET Wiring Regulations 18th Edition  The Scottish Building Standards 2015   * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE A guide * CIBSE B guide * CIBSE C guide * CIBSE K guide * KS14 Energy Efficient Heating * TM39 Building Energy Metering * Commissioning Code W 2010 | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) * Commissioning Management (AG 5/2002) | | |
| Health and Safety Executive   * HSG85 Electricity at work: Safe working practices | | |
| NICEIC   * Technical Guidance | | |
| Energy Networks Association   * Engineering Recommendation: Guidelines for the Provision of Low Voltage Connections to Multiple Occupancy Buildings (G87/2010) | | |
| British Standards | BS 5422 | 2009 | Thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C and 700°C |
|  | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 12831 | 2003 | Heating systems in buildings - Method for calculation of the design heating load |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_37\_48 Low temperature hot water heating

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993  Clean Air Act Memorandum  The Gas Safety (Installation and Use) Regulations 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L1a 2013 Conservation of fuel and power in new dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 3 (Environment) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code W 2010 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems * KS14 Energy Efficient Heating | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Water Systems (BG 2/2010) * Commissioning Management (AG 5/2002) * Energy Efficient Pumping Systems (BG 12/2011) * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG 16/2002) * Commissioning of Pipe Work Systems (AG 20/95) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG 50/2013). * Selection of Control Valves in Variable Flow Systems (BG 51/2014) | | |
| British Standards | BS 5422 | 2009 | Thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C and 700°C |
|  | BS 6880 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW |
|  | BS EN 12828 | 2012 | Heating systems in buildings - Design for water based heating systems |
|  | BS EN 12831 | 2003 | Heating systems in buildings - Method for calculation of the design heating load |
|  | BS EN 14336 | 2004 | Heating systems in buildings Installation and commissioning of water based heating systems |
|  | BS EN 1264 | 2011 | Water based surface embedded heating and cooling systems |

### Project Specific

|  |  |
| --- | --- |
| Flow Temperature | 80°C |
| Return Temperature | 60°C |
| Maximum pipework pressure drop per meter length | 300Pa/m |
| Warm-up margin | 20% |
|  |  |
|  |  |
| All Manufacturer’s recommendations and instructions | In particular   * Booster set installation * Tenant Valve Assembly * Hydraulic Interface Unit (HIU) design guide |

|  |  |
| --- | --- |
| Space | Design Temperature |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_60\_55\_96\_00 CLEANING AND CHEMICAL TREATMENT
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_60\_40\_37\_81 Solar Collectors

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide G: Public Health Engineering * HVSH Solar Heating Design and Installation * KS15: Capturing Solar Energy | | |
| Health and Safety Executive   * Legionnaires' disease. The control of legionella bacteria in water systems (L8) | | |
| British Standards | BS 5918 | 2015 | Solar heating systems for domestic hot water. Code of practice for design and installation |
|  | BS EN 12975 | 2006 | Thermal solar systems and components. Solar collectors. |
|  | BS EN 12976 | 2017 | Thermal solar systems and components. Factory made systems |
|  | BS EN 12977 | 2018 | Thermal solar systems and components. Custom built systems |
|  | BS EN ISO 9806 | 2017 | Solar energy. Solar thermal collectors. Test methods |
|  | BS EN 15316-4-3 | 2017 | Energy performance of buildings. Method for calculation of system energy requirements and system efficiencies. Heat generation systems, thermal solar and photovoltaic systems. |
|  | BS EN ISO 22975-2 | 2016 | Solar energy. Collector components and materials. Heat-pipes for solar thermal application. Durability and performance. |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Pr\_60\_60\_13\_00 Central Refrigeration Plant

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code R 2002 * Commissioning Code W 2010 * CIBSE A guide * CIBSE B guide * CIBSE C guide * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems   Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * CHP for Existing Buildings. Guidance on design and installation (BG 2/2007) * Commissioning Water Systems (BG 2/2010) * Commissioning Management (AG 5/2002) * Energy Efficient Pumping Systems (BG 12/2011) * Commissioning of Pipe Work Systems (AG 20/95) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG 50/2013). * Selection of Control Valves in Variable Flow Systems (BG 51/2014) | | |
| British Standards | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 7074-3 | 1989 | Application, selection and installation of expansion vessels and ancillary equipment for sealed water systems. Code of practice for chilled and condenser systems |
|  | BS EN 378 | 2016 | Refrigerating systems and heat pumps. Safety and environmental requirements |
|  | BS EN 14511 | 2013 | Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Pr\_60\_60\_08\_81 Solid Fuel Boilers - Biomass

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Pressure Equipment Directive (PED) 97/23/EC, implemented in the UK through the Pressure Equipment Regulations 1999  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993  Clean Air Act Memorandum  The Gas Safety (Installation and Use) Regulations 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part J Combustion Appliances & Fuel Storage Systems * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy)   Local Authority air quality requirements/guidance | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code B 2002 * CIBSE B guide * AM14 Non-Domestic Hot Water Heating Systems * KS07 Variable Flow Pipework Systems * KS09 Commissioning Variable Flow Pipework Systems * KS15 Biomass Heating   Building Services Research and Information Association (BSRIA)   * Energy Efficient Pumping Systems (BG12/2011) * Commissioning Water Systems (BG 2/2010) * Pre-Commission Cleaning of Pipework Systems (BG 29/2012) * Water Treatment for Closed Heating and Cooling Systems (BG50/2013). * Variable Flow Water Systems ‐ Design, installation and commissioning guidance (AG16/2002) * Selection of Control Valves in Variable Flow Systems (BG 51/2014) | | |
| British Standards | BS 5410-1 | 2014 | Code of practice for oil firing. Installations up to 45 kW output capacity for space heating and hot water supply purposes |
|  | BS 5854 | 1980 | Code of practice for flues and flue structures in buildings |
|  | BS 6880 | 1988 | Code of practice for low temperature hot water heating systems of output greater than 45kW |
|  | BS EN 303-5 | 2012 | Heating boilers. Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW. Terminology, requirements, testing and marking |
|  | BS EN 1443 | 2003 | Chimneys - General requirements |
|  | BS EN 12828 | 2012 | Heating systems in buildings - Design for water based heating systems |
|  | BS EN 12831 | 2003 | Heating systems in buildings - Method for calculation of the design heating load |
|  | BS EN 14336 | 2004 | Heating systems in buildings Installation and commissioning of water based heating systems |
|  | BS EN 15035 | 2006 | Heating boilers. Special requirements for oil fired room sealed units up to 70 kW |
|  | BS EN 15270 | 2007 | Pellet burners for small heating boilers. |
|  | BS EN 17225 | 2014 | Solid biofuels. Fuel specifications and classes |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_52\_00\_00 PIPELINES
* PR\_20\_85\_00\_00 PIPELINE ANCILLARIES
* PR\_65\_53\_00\_00 PUMPS
* PR\_60\_60\_38\_00 STORAGE CYLINDERS AND CALORIFIERS
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_25\_00 Dust Collection Extract Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN RESPONSIBILITIES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L1a 2013 Conservation of fuel and power in new dwellings * Part F 2013 (Ventilation) * Non-Domestic Building Services Compliance Guide * Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Domestic Ventilation Systems (A Guide to Measuring Airflow Rates) BG46/2013 * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

### Overview and scope

### Ductwork

### AHUs

### Fans

### Insulation

### General requirements

### Testing, commissioning and documentation

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_32\_00 Fume Extract Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN RESPONSIBILITIES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L1a 2013 Conservation of fuel and power in new dwellings * Part F 2013 (Ventilation) * Non-Domestic Building Services Compliance Guide * Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Domestic Ventilation Systems (A Guide to Measuring Airflow Rates) BG46/2013 * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

### Overview and scope

### Ductwork

### AHUs

### Fans

### Insulation

### General requirements

### Testing, commissioning and documentation

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_33\_00 General Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN RESPONSIBILITIES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part F Ventilation * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Domestic Ventilation Systems (A Guide to Measuring Airflow Rates) BG46/2013 * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 12101 (All parts) | Various | Smoke and heat control systems |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

### Overview and scope

### Ductwork

* For ductwork close to humidifiers, the sections of duct with humidifier lances (using RO water) and the ductwork 2m downstream are to be either stainless steel or plastic coated to prevent corrosion.

### AHUs

### Fans

### Insulation

### General requirements

### Testing, commissioning and documentation

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_33\_45 Kitchen Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part B Fire safety * Part F Ventilation * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * KS17 Indoor Air Quality and Ventilation * TM50 Energy Efficiency in Commercial Kitchens | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW172 Specification for Kitchen Ventilation Systems * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
|  | IGE Gas Measurement (GM) and General Procedures Regulations:   * IGEM/UP/19 Design and application of interlocking devices and associated systems used with gas appliance installations in commercial catering establishments | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 12101 (All parts) | Various | Smoke and heat control systems |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |
|  | BS EN 16282 | 2014 | Equipment for commercial kitchens. Components for ventilation of commercial kitchens |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_33\_90 Toilet Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part F Ventilation * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Domestic Ventilation Systems (A Guide to Measuring Airflow Rates) BG46/2013 * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 12101 (All parts) | Various | Smoke and heat control systems |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_80\_00 Smoke Extract and Smoke Control

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part B Fire safety * Part F Ventilation * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * CIBSE E Guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * DW172 Specification for Kitchen Ventilation Systems * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 7346 |  | Components for smoke and heat control systems |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings. Code of practice |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 12101 (All parts) | Various | Smoke and heat control systems |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_65\_40\_94\_00 Car Park Ventilation

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  Environmental Protection Act 1990, Environmental Protection Regulations 1991, Clean Air Act 1993 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part B Fire safety * Part F Ventilation * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 3 (Environment) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * Commissioning Code A 2004 * CIBSE A guide * CIBSE B guide * CIBSE C guide * AM10 Natural Ventilation in Non-Domestic Buildings * AM13 Mixed Mode Ventilation * KS17 Indoor Air Quality and Ventilation | | |
| Building Services Research and Information Association (BSRIA)   * Commissioning HVAC Systems: Guidance on the division of responsibilities (TM 1/88.1) * Commissioning Management (AG 5/2002) * Commissioning Air Systems (BG 49/2015) | | |
| Building & Engineering Services Association (B&ES), formerly the HVCA   * DW143 Guide to Good Practice – Ductwork Air Leakage Testing * DW144 Specification for Sheet Metal Ductwork * DW154 Specification for Plastics Ductwork * TR19 Guide to Good Practice - Internal Cleanliness of Ventilation Systems | | |
| Association for Petroleum and Explosives Administration   * Code of Practice for Ground Floor Multi Storey and Underground Car Parks (2nd Edition, 1995) | | |
| British Standards | BS 476-24 | 1987 | Fire tests on building materials and structures. Method for determination of the fire resistance of ventilation ducts |
|  | BS 5422 | 2009 | Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range -40°C to +700°C |
|  | BS 7346-7 | 2013 | Components for smoke and heat control systems. Code of practice on functional recommendations and calculation methods for smoke and heat control systems for covered car parks |
|  | BS 8233 | 2014 | Guidance on sound insulation and noise reduction for buildings |
|  | BS 9999 | 2016 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 13779 | 2007 | Ventilation for non-residential buildings. Performance requirements for ventilation and room-conditioning systems |
|  | BS EN 15423 | 2008 | Ventilation for buildings. Fire precaution for air distribution systems in buildings |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_65\_00\_00 AIR DUCTLINES AND ANCILLARIES
* PR\_65\_67\_29\_00 FANS
* PR\_70\_65\_04\_00 GRILLES/DIFFUSERS/LOUVRES
* PR\_25\_31\_48\_00 THERMAL INSULATION
* AC\_60\_00\_00\_00 TESTING AND COMMISSIONING
* PR\_80\_77\_94\_00 VIBRATION ISOLATION MOUNTINGS
* PR\_40\_10\_57\_26 IDENTIFICATION - MECHANICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_10\_30\_72 Electricity Generation – Generator

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L1A 2013 Conservation of fuel and power in new dwellings * Part L2A 2013 Conservation of fuel and power in new buildings other than dwellings * Non-Domestic Building Services Compliance Guide * Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE J guide * CIBSE K guide * KS15 Capturing Solar Energy * TM38 Renewable Energy Sources for Buildings | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Energy Networks Association   * Connection of Generation < 3.68kW (G98) * Connection of Generation > 3.68kW (G99) | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |
|  | BS IEC 62548 | 2016 | Photovoltaic (PV) arrays - design requirements |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_10\_70\_35 Electricity Generation – PV

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Health and Safety at Work Act 1974  The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Part B Fire safety * Part P Electrical safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE J guide * CIBSE K guide * KS15 Capturing Solar Energy * TM38 Renewable Energy Sources for Buildings | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006)   IEE Code of Practice for In Service Inspections and Testing of Electrical Equipment | | |
| Energy Networks Association   * Connection of Generation < 3.68kW (G98) * Connection of Generation > 3.68kW (G99)   Electrical Contractors Association (ECA) Guidance   * Guide to the installation of photovoltaic systems   Department of Trade and Industry   * Photovoltaics in Buildings – Testing, Commissioning and Monitoring Guide * Photovoltaics in Buildings – Safety and the CDM Regulations * Photovoltaics in Buildings – Guide to the Installation of PV Systems   Microgeneration Installation Standards   * MIS 3002 (issue 3.3)   NICEIC   * Technical Guidance | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |
|  | BS IEC 62548 | 2016 | Photovoltaic (PV) arrays - design requirements |
|  | BS EN 61194 | 1996 | Characteristic parameters of stand-alone photovoltaic (PV) systems. |
|  | BS EN 61215 | 2017 | Crystalline silicon terrestrial photovoltaic (PV) modules. Design qualification and type approval. |
|  | BS EN 61727 | 1996 | Photovoltaic (PV) systems - Characteristics of the utility interface. |
|  | BS EN 61000 | varies | Electromagnetic compatibility (EMC) – All parts |
|  | BS EN IEC 61730 | 2018 | Photovoltaic (PV) module safety qualification. |
|  | BS EN 62920 | 2017 | [Photovoltaic power generating systems. EMC requirements and test methods for power conversion equipment.](https://shop.bsigroup.com/ProductDetail?pid=000000000030332624) |
|  | BS EN 50618 | 2014 | Electric cables for photovoltaic systems |
|  | BS EN 62446 | 2016 | [Photovoltaic (PV) systems. Requirements for testing, documentation and maintenance. Grid connected systems.](https://shop.bsigroup.com/ProductDetail?pid=000000000030276487) |
|  | BS EN 50583 | 2016 | [Photovoltaics in buildings. BIPV](https://shop.bsigroup.com/ProductDetail?pid=000000000030328521) |
|  | BS IEC 62894 | 2014+ A1: 2016 | [Photovoltaic inverters. Data sheet and name plate.](https://shop.bsigroup.com/ProductDetail?pid=000000000030339532) |
|  | BS EN 62109 | 2011 | [Safety of power converters for use in photovoltaic power systems. All](https://shop.bsigroup.com/ProductDetail?pid=000000000030105880) parts |
|  | BS EN 62124 | 2005 | [Photovoltaic (PV) stand-alone systems. Design verification.](https://shop.bsigroup.com/ProductDetail?pid=000000000030042213) |

### Project Specific

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| Employers insurance | | | |
| Requirements of the local electricity utility company | | | |
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## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_10\_70\_82 Electricity Generation – Small-Scale Wind

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L1A 2013 Conservation of fuel and power in new dwellings * Part L2A 2013 Conservation of fuel and power in new buildings other than dwellings * Non-Domestic Building Services Compliance Guide * Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE J guide * CIBSE K guide * KS15 Capturing Solar Energy * TM38 Renewable Energy Sources for Buildings | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Energy Networks Association   * Connection of Generation < 3.68kW (G98) * Connection of Generation > 3.68kW (G99) | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |
|  | BS IEC 62548 | 2016 | Photovoltaic (PV) arrays - design requirements |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_30\_35\_00 HV Supply / Public Utility Supply

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Health and Safety at Work Act 1974  The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part B Fire safety * Part P Electrical safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
|  | NICEIC   * Technical Guidance | | |
| British Standards | BS 6626 | 2010 | Maintenance of electrical switchgear and controlgear for voltages above 1 kV and up to and including 36 kV. Code of practice |
|  | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 50522 | 2010 | Earthing of power installations exceeding 1 kV a.c |
|  | BS EN 61936-1 | 2010 | Power installations exceeding 1 kV a.c. Common rules |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_30\_45\_00 LV Supply / Public Utility Supply

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Health and Safety at Work Act 1974  The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part B Fire safety * Part P Electrical safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| European Commission   * European Commission Directive 73/23/EEC | | |
|  | NICEIC   * Technical Guidance | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_30\_45\_45 LV Distribution

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Health and Safety at Work Act 1974  The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents (latest version)   * Part B Fire safety * Part P Electrical safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide * CIBSE TM39: Building Energy Metering | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Health and Safety Executive   * HSG85 Electricity at work: Safe working practices | | |
| NICEIC   * Technical Guidance | | |
| Energy Networks Association   * Engineering Recommendation: Guidelines for the Provision of Low Voltage Connections to Multiple Occupancy Buildings (G87/2010) | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |

## SYSTEM DESCRIPTION

Power supplies to “Specialist Systems” (e.g. security, fire alarm, BMS etc.) are NOT necessarily shown and the Contractor shall liaise with the appointed Specialists to ensure all installations are provided with suitable power supplies, as required by SPEC-200, Design Responsibility. The tender price is deemed to have included these power supplies.

The use of non-metallic fixings/support of the containment shall not be employed in any areas considered subject to premature collapse that could cause an entanglement. BS 7671:2018 (IET Wiring Regulations 18th Edition) includes a requirement that wiring systems that could collapse shall have fire-resisting supports. Cables on top of cable tray, ladder rack or similar, or cables installed within conduit and metallic trunking systems would need no special consideration. Cables clipped to walls and cables inside of plastic trunking with lids will require a fire-resisting fixing in such a way that they will not become an entanglement risk in an emergency. Wiring systems need to be secured to stop cables falling if their support failed when heated. Any wiring systems within the fabric of the building that are not liable to premature collapse would not need to comply with this requirement.

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_30\_80\_00 Small Power Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Part M 2015 (Access to and use of buildings: Volume 1 Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide * CIBSE TM39: Building Energy Metering | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Health and Safety Executive   * HSG85 Electricity at work: Safe working practices | | |
| NICEIC   * Technical Guidance | | |
| Energy Networks Association   * Engineering Recommendation: Guidelines for the Provision of Low Voltage Connections to Multiple Occupancy Buildings (G87/2010) | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 60947-6 | 2005 | Low-voltage switchgear and controlgear. Multiple function equipment. Transfer switching equipment |

## SYSTEM DESCRIPTION

* Power supplies to “Specialist Systems” (e.g. security, fire alarm, BMS etc.) are NOT necessarily shown and the Contractor shall liaise with the appointed Specialists to ensure all installations are provided with suitable power supplies, as required by SPEC-200, Design Responsibility. The tender price is deemed to have included these power supplies.
* Provide final circuit power distribution to power all sensors for sanitaryware (taps, WCs, urinals, etc).

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_80\_25\_00 Street/Area/Flood Lighting

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 (EAW Regulations)  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part L 2013 (Conservation of Fuel and Power) * Part P 2013 (Electrical safety - Dwellings) * Part M 2015 (Access to and use of buildings: Volume 1 Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015  Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide F: Energy Efficiency in Buildings * CIBSE Guide K: Electricity in Buildings * CIBSE Commissioning Code L: Lighting * SLL Lighting Guides * SLL Code for Lighting 2012 * TM39 Building Energy Metering 2009 | | |
| The Institution of Lighting Professionals   * GN 01 Guidance notes for the reduction of obtrusive light, 2011 | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG3/2006) * BSRIA Power Quality Guide (AG2/2000) | | |
| NIC/EIC   * Technical Guidance | | |
| Health and Safety Executive   * HSG38 Lighting at Work | | |
| British Standards | BS 5489-1 | 2003 | Code of Practice for the Design of Road Lighting- Part 1: Lighting of Roads and Public Amenity Area |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 12464-2 | 2014 | Light and Lighting - Lighting of Work Places - Part 2: Outdoor Work Places |
|  | PD CEN/TR 13201-1 | 2014 | Road lighting. Guidelines on selection of lighting classes |
|  | BS EN 13201-2 | 2003 | Road lighting. Performance requirements |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 60598-1 | 2015 | Luminaires. General requirements and tests |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_80\_33\_00 General Lighting

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 (EAW Regulations)  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Part M 2015 (Access to and use of buildings: Volume 1 Dwellings) * Part M 2015 (Access to and use of buildings: Volume 2 Buildings other than dwellings) * Part L1a Conservation of fuel and power in new dwellings * Part L1b Conservation of fuel and power in existing dwellings * Part L2a Conservation of fuel and power in new buildings other than dwellings * Part L2b Conservation of fuel and power in existing buildings other than dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  BS 7671 - IET Wiring Regulations 18th Edition  The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide F: Energy Efficiency in Buildings * CIBSE Guide K: Electricity in Buildings * CIBSE Commissioning Code L: Lighting * SLL Lighting Guides * SLL Code for Lighting 2012 * TM39 Building Energy Metering 2009 | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG3/2006) * BSRIA Power Quality Guide (AG2/2000) | | |
| NIC/EIC   * Technical Guidance | | |
| British Standards | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 60598-1 | 2015 | Luminaires. General requirements and tests |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_70\_80\_33\_12 Emergency Lighting

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 (EAW Regulations)  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Part M 2015 (Access to and use of buildings: Volume 1 Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE Guide F: Energy Efficiency in Buildings * CIBSE Guide K: Electricity in Buildings * CIBSE Commissioning Code L: Lighting * SLL Lighting Guides * SLL Code for Lighting 2012 | | |
| Industry Committee for Emergency Lighting (ICEL)   * ICEL 1001:1999: Scheme of Product and Authenticated Photometric data Registration for Emergency Luminaires and Conversion Modules. * ICEL 1004:2003: The use of Emergency Lighting Modification Units * ICEL 1006:1999: Emergency Lighting Guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG3/2006) * BSRIA Power Quality Guide (AG2/2000) | | |
| NIC/EIC   * Technical Guidance | | |
| British Standards | BS 5266-1 | 2016 | Emergency lighting. Code of practice for the emergency lighting of premises |
|  | BS 5499-4 | 2013 | Safety signs. Code of practice for escape route signing |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings. Code of practice |
|  | BS 9999 | 2008 | Code of practice for fire safety in the design, management and use of buildings |
|  | BS EN 1838 | 2013 | Lighting applications. Emergency lighting |
|  | BS EN 50172 | 2004 | Emergency escape lighting systems |
|  | BS EN 60598-1 | 2008 | Luminaires. General requirements and tests |
|  | BS EN 60598-2-22 | 2014 | Luminaires. Particular requirements. Luminaires for emergency lighting |
|  | BS EN 62034 | 2012 | Automatic test systems for battery powered emergency escape lighting |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_21\_21 Structured Cabling System

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Communications Act 2003 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Part P 2013 Electrical safety * Part R - Electronic communications * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 4 (Safety) * Section 6 (Energy)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS 7671:2018) | | |
| Utilities | Requirements of   * BT Openreach - Builders Guide issue 7 * BT Openreach Developer's Guide Copper Cabling * BT Openreach Developer's Guide Fibre Cabling (where applicable) * Hyperoptic (or other FTTP infrastructure provider) developer’s guidance documents (where applicable) * Virgin Media (or other FTTC infrastructure provider) developer’s guidance documents (where applicable) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) * Commissioning Job Book – a framework for managing the commissioning process (BG 11/2010) | | |
| European Commission   * European Directive 1999/5/EC – Radio and Telecommunication Terminal Equipment Directive | | |
| Telecommunications Industry Association   * TIA-568 Standards | | |
| International Organisation for Standardisation   * ISO/IEC 11801:2017 Information technology -- Generic cabling for customer premises | | |
| British Standards | BS 6701 | 2016 | Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance |
|  | BS 8492 | 2016 | Telecommunications equipment and telecommunications cabling. Code of practice for fire performance and protection |
|  | BS EN 41003 | 2009 | Particular safety requirements for equipment to be connected to telecommunication networks and/or a cable distribution system |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 50085-2-3 | 2010 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for slotted cable trunking systems intended for installation in cabinets |
|  | BS EN 50173 | Varies | Information technology. Generic cabling systems – All parts |
|  | BS EN 50174 | Varies | Information technology. Cabling installation – All parts |
|  | BS EN 50310 | 2016 | Telecommunications bonding networks for buildings and other structures |
|  | BS EN 60793-2 | 2016 | Optical fibres. Product specifications. General |
|  | BS EN 60794-1-1 | 2016 | Optical fibre cables. Generic specification. General |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_21\_88 Telecommunications

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  Communications Act 2003 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Part P 2013 Electrical safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 4 (Fire) * Section 6 (Energy)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  BS 7671 - IET Wiring Regulations 18th Edition | | |
| Utilities | Requirements of   * BT Openreach - Builders Guide issue 7 * BT Openreach Developer's Guide Copper Cabling * BT Openreach Developer's Guide Fibre Cabling (where applicable) * Hyperoptic (or other FTTP infrastructure provider) developer’s guidance documents (where applicable) * Virgin Media (or other FTTC infrastructure provider) developer’s guidance documents (where applicable) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) * Commissioning Management (AG 5/2002) | | |
| European Commission   * European Directive 1999/5/EC – Radio and Telecommunication Terminal Equipment Directive | | |
| NIC/EIC   * Technical Guidance | | |
| British Standards | BS 6701 | 2016 | Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance |
|  | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS 8492 | 2016 | Telecommunications equipment and telecommunications cabling. Code of practice for fire performance and protection |
|  | BS EN 41003 | 2009 | Particular safety requirements for equipment to be connected to telecommunication networks and/or a cable distribution system |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 50085-2-3 | 2010 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for slotted cable trunking systems intended for installation in cabinets |
|  | BS EN 50310 | 2016 | Telecommunications bonding networks for buildings and other structures |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_46\_05 Audio-Frequency Induction-Loop Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  Equality Act 2010 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards   * Section 2 (Fire) * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  BS 7671 - IET Wiring Regulations 18th Edition | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE D Guide | | |
| British Standards | BS 7594 | 2011 | Code of practice for audio-frequency induction-loop systems (AFILS) |
|  | BS 8300 | 2009 | Design of buildings and their approaches to meet the needs of disabled people. Code of practice |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_68\_68 Public Address Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Communications Act 2003 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) * Section 5 (Noise)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  BS 7671 - IET Wiring Regulations 18th Edition | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide | | |
| European Commission   * European Directive 1999/5/EC – Radio and Telecommunication Terminal Equipment Directive | | |
| British Standards | BS 6701 | 2016 | Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance |
|  | BS 8492 | 2016 | Telecommunications equipment and telecommunications cabling. Code of practice for fire performance and protection |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 50085-2-3 | 2010 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for slotted cable trunking systems intended for installation in cabinets |
|  | BS EN 50310 | 2016 | Telecommunications bonding networks for buildings and other structures |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_70\_70 Radio Distribution Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Data Protection Act 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Part  P 2013 Electrical Safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Guidance and Specification for Electronic Security Systems (FMS3/98) | | |
| NIC/EIC   * Technical Guidance | | |
| National Security Inspectorate (NSI – formally NACOSS & ISI)   * Code of Practice NCP 104 for the design, installation and maintenance of CCTV systems | | |
| Home Office   * Home Office CCTV Operational Requirements Manual 2009 | | |
| NSI   * Codes of Practice | | |
| British Standards | BS 6259 | 2015 | Code of practice for the design, planning, installation, testing and maintenance of sound systems |
|  | BS 7958 | 2015 | Closed circuit television (CCTV). Management and operation. Code of practice |
|  | BS 8495 | 2007 | Code of practice for digital CCTV recording systems for the purpose of image export to be used as evidence |
|  | BS EN 50083 |  | Cable networks for television signals, sound signals and interactive services |
|  | BS EN 50132-1 | 2010 | Alarm systems. CCTV surveillance systems for use in security applications. System requirements |
|  | BS EN 50132-7 | 2012 | Alarm systems. CCTV surveillance systems for use in security applications. Application guidelines |
|  | BS EN 60728 |  | Cable Networks for television signals, sound signals, and interactive services |
|  | BS EN 62676-4 | 2015 | Video surveillance systems for use in security applications. Application guidelines |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_10\_70\_80 Television Distribution Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Data Protection Act 1998 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Part  P 2013 Electrical Safety * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Guidance and Specification for Electronic Security Systems (FMS3/98) | | |
| NIC/EIC   * Technical Guidance | | |
| National Security Inspectorate (NSI – formally NACOSS & ISI)   * Code of Practice NCP 104 for the design, installation and maintenance of CCTV systems | | |
| Home Office   * Home Office CCTV Operational Requirements Manual 2009 | | |
| NSI   * Codes of Practice | | |
| British Standards | BS 6259 | 2015 | Code of practice for the design, planning, installation, testing and maintenance of sound systems |
|  | BS 7958 | 2015 | Closed circuit television (CCTV). Management and operation. Code of practice |
|  | BS 8495 | 2007 | Code of practice for digital CCTV recording systems for the purpose of image export to be used as evidence |
|  | BS EN 50083 |  | Cable networks for television signals, sound signals and interactive services |
|  | BS EN 50132-1 | 2010 | Alarm systems. CCTV surveillance systems for use in security applications. System requirements |
|  | BS EN 50132-7 | 2012 | Alarm systems. CCTV surveillance systems for use in security applications. Application guidelines |
|  | BS EN 60728 |  | Cable Networks for television signals, sound signals, and interactive services |
|  | BS EN 62676-4 | 2015 | Video surveillance systems for use in security applications. Application guidelines |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_40\_02\_00 Access Control

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, SI 2006/3418 | | |
| Health and Safety Executive | The Electricity at Work Regulations 1989, 2015, HSR25  Construction Design and Management (CDM) Regulations, CDM2015 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part M 2015 Access to and use of buildings * Part P 2013 Electrical safety - Dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety)   IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG 3/2006) * Guidance and Specification for Electronic Security Systems (FMS 3/98) | | |
| NIC/EIC   * Technical Guidance | | |
|  | | |
| The National Security Inspectorate (NSI)   * Code of Practice for Planning, Installation and Maintenance of Access Control Systems, NCP 109 | | |
| British Security Industry Association (BSIA)   * A specifier’s guide to access control systems, No. 132 | | |
|  | The Security Systems and Alarms Inspection Board (SSAIB)   * Code of Practice for Access Control Systems | | |
| British Standards | BS EN 50130-4 | 2011 | Alarm systems. Electromagnetic compatibility. |
|  | BS EN 50131 | 2006+ A2:2017 | Alarm systems. Intrusion and hold-up systems. System requirements |
|  | BS EN 50131-2 | 2013 | Alarm systems. Alarm transmission systems and equipment. Requirements for supervised premises transceiver (SPT) |
|  | BS EN 50133-1 |  | Alarm systems. Access control systems for use in security applications. |
|  | BS EN 50130-4 | 2011 | Alarm systems. Electromagnetic compatibility. |
|  | BS EN 50486 | 2008 | Equipment for use in audio and video door-entry systems |
|  | BS EN 60839-11-1 | 2013 | Alarm and electronic security systems. Electronic access control systems. System and components requirements |
|  | BS EN 60839-11-2 | 2015 | Alarm and electronic security systems. Electronic access control systems. Application guidelines |
|  | BS 7273-4 | 2015 | Code of practice for the operation of fire protection measures. Actuation of release mechanisms for doors |
|  | BS 8300 | 2009 | [Design of buildings and their approaches to meet the needs of disabled people. Code of practice](http://shop.bsigroup.com/ProductDetail?pid=000000000030217421) |
|  | BS 9263 | 2016 | Intruder and hold-up alarm systems – Commissioning, maintenance and remote support – Code of practice |
|  | PAS 24 | 2012 | Enhanced security performance requirements for door assemblies |
|  | PD 6662 | 2017 | Scheme for the application of European Standards for intrusion and hold-up alarm systems |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_40\_53\_86 Surveillance Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 SI 1989/635  The Electromagnetic Compatibility Regulations 2006/3418  Data Protection Act | | |
| Health and Safety Executive | The Electricity at Work Regulations 1989, HSR25  Construction Design and Management (CDM) Regulations, CDM2015 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part M 2015 Access to and use of buildings * Part P 2013 Electrical safety - Dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Guidance and Specification for Electronic Security Systems (FMS3/98) | | |
| NIC/EIC   * Technical Guidance | | |
| National Security Inspectorate (NSI – formally NACOSS & ISI)   * Code of Practice NCP 104 for the design, installation and maintenance of CCTV systems * Other relevant codes of practice | | |
| Home Office   * Home Office CCTV Operational Requirements Manual 2009 | | |
| British Standards | BS 6259 | 2015 | Code of practice for the design, planning, installation, testing and maintenance of sound systems |
|  | BS 7958 | 2015 | Closed circuit television (CCTV). Management and operation. Code of practice |
|  | BS 8418 | 2015 | Installation and remote monitoring of detector-activated CCTV systems |
|  | BS 8495 | 2007 | Code of practice for digital CCTV recording systems for the purpose of image export to be used as evidence |
|  | BS EN 50083 |  | Cable networks for television signals, sound signals and interactive services |
|  | BS EN 50132-1 | 2010 | Alarm systems. CCTV surveillance systems for use in security applications. System requirements |
|  | BS EN 50132-7 | 2012 | Alarm systems. CCTV surveillance systems for use in security applications. Application guidelines |
|  | BS EN 60728 |  | Cable Networks for television signals, sound signals, and interactive services |
|  | BS EN 62676-4 | 2015 | Video surveillance systems for use in security applications. Application guidelines |
| National Security Inspectorate | NCP 104 | 2012 | Code of Practice for the design, installation and maintenance of CCTV systems |
| British Security Industry Association (BSIA) | Form 109 | 2014 | planning, design, installation and operation of CCTV surveillance systems - code of practice and associated guidance |
| Home Office | 28/09 | 2009 | CCTV Operational Requirements Manual |
| Home Office | 66/08 | 2008 | Retrieval of Video Evidence and Production of Working Copies from Digital CCTV Systems v2.0 |
| Home Office | 09/05 | 2005 | UK Police Requirements for Digital CCTV Systems |
| Information Commissioners Office | Version 1.2 | 2017 | In the picture: A data protection code of practice for surveillance cameras and personal information |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_40\_75\_40 Security Detection and Alarm

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Data Protection Act  The Electricity at Work Regulations 1989. SI 1989/635  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418 | | |
| Health and Safety Executive | The Electricity at Work Regulations 1989, 2015, HSR25 | | |
|  | Construction Design and Management (CDM) Regulations, 2015, CDM2015 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part M 2015 Access to and use of buildings * Part P 2013 Electrical safety - Dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG 3/2006) * Guidance and Specification for Electronic Security Systems (FMS 3/98) | | |
| NIC/EIC   * Technical Guidance * Integration of intruder alarm systems with other systems under PD 6662 | | |
| NSI   * Codes of Practice | | |
| British Security Industry Association (BSIA)   * Technical Guidance | | |
|  | Loss Prevention Certification Board (LPCB)   * Requirements for LPCB approval and listing of alarm transmission equipment, 2014, LPS 1277 3.0 | | |
| British Standards | BS EN 50131-1 | 2006+ A2:2017 | Alarm systems. Intrusion and hold-up systems. |
|  | BS EN 50131-2 | 2013 | Alarm systems. Alarm transmission systems and equipment. Requirements for supervised premises transceiver (SPT) |
|  | BS EN 50130-4 | 2011+A1:2014 | Alarm systems. Electromagnetic compatibility. |
|  | BS EN 50136-1 | 2012+A1:2018 | Alarm systems - Alarm transmission systems and equipment. General requirements for alarm transmission system |
|  | BS 8243 | 2010  +A1:2014 | Installation and configuration of intruder and hold-up alarm systems designed to generate confirmed alarm conditions - Code of practice |
|  | BS 8300 | 2009 | [Design of buildings and their approaches to meet the needs of disabled people. Code of practice](http://shop.bsigroup.com/ProductDetail?pid=000000000030217421) |
|  | PD 6662 | 2017 | Scheme for the application of European Standards for intrusion and hold-up alarm systems |
|  | BS 9263 | 2016 | Intruder and hold-up alarm systems – Commissioning, maintenance and remote support – Code of practice |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_50\_11\_05 Accessible WC Alarm

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  Equality Act 2010 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE D Guide | | |
| British Standards | BS 5839-9 | 2011 | Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems |
|  | BS 8300 | 2009 | Design of buildings and their approaches to meet the needs of disabled people. Code of practice |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_50\_11\_27 Disabled Refuge Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Equality Act 2010 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE D Guide | | |
| British Standards | BS 5839-9 | 2011 | Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems |
|  | BS 8300 | 2009 | Design of buildings and their approaches to meet the needs of disabled people. Code of practice |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_50\_11\_57 Patient to Nurse Call Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |
| --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Communications Act 2003  Electromagnetic Compatibility (EMC) Directive 2014/30/EU |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) * Section 5 (Noise) |

|  |  |  |  |
| --- | --- | --- | --- |
| Industry standards | European Commission   * European Directive 1999/5/EC – Radio and Telecommunication Terminal Equipment Directive * ETSI EN 301 489-1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements * ETSI EN 301 489-3 Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU   ETSI EN 300 220-2 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive | | |
| Department of Health   * Health Technical Memorandum 06-02: Electrical safety guidance for low voltage systems   Health Technical Memorandum 08-03: Bedhead services | | |
|  | | |
| British Standards | BS 6701 | 2016 | Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance |
|  | BS 8492 | 2016 | Telecommunications equipment and telecommunications cabling. Code of practice for fire performance and protection |
|  | BS EN 50085-1 | 2005 | Cable trunking systems and cable ducting systems for electrical installations. General requirements +A1:2013 |
|  | BS EN 50085-2-1 | 2006 | Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings+A1:2011 |
|  | BS EN 50085-2-2 | 2008 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for cable trunking systems and cable ducting systems intended for mounting underfloor, flushfloor, or onfloor |
|  | BS EN 50085-2-3 | 2010 | Cable trunking systems and cable ducting systems for electrical installations. Particular requirements for slotted cable trunking systems intended for installation in cabinets |
|  | BS EN 50310 | 2016 | Telecommunications bonding networks for buildings and other structures |
|  | BS EN 61000 |  | Electromagnetic Compatibility (EMC) |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_50\_11\_95 Voice Alarm Systems

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989  The Electromagnetic Compatibility Regulations, 2015 , SI 2006/3418  Equality Act 2010 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part  M 2015 Access to and use of buildings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE D Guide | | |
| British Standards | BS 5839-9 | 2011 | Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems |
|  | BS 7594 | 2011 | Code of practice for audio-frequency induction-loop systems (AFILS) |
|  | BS 8300 | 2009 | Design of buildings and their approaches to meet the needs of disabled people. Code of practice |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |
|  | BS EN 62820-1-1 | 2016 | Building intercom systems. System requirements. General |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_50\_28\_29 Fire Detection and Alarm

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Regulatory Reform (Fire Safety) Order 2005  The Electricity at Work Regulations 1989 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part B 2013 Fire Safety * Part M 2015 Access to and use of buildings * Part P 2013 Electrical safety - Dwellings * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018)  Local Authority building control and licensing requirements | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE E Guide * CIBSE K Guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services (BG3/2006) | | |
| NIC/EIC   * Technical Guidance | | |
| Fire Industry Association   * Technical Guidance | | |
| British Standards | BS 5839 | Varies | Fire detection and fire alarm systems for buildings – all parts |
|  | BS 5839-8 | 2013 | Fire detection and fire alarm systems for buildings. Code of practice for the design, installation, commissioning and maintenance of voice alarm systems. |
|  | BS EN 50849 | 2017 | Sound systems for emergency purposes. |
|  | BS 5446-2 | 2003 | Fire detection and fire alarm devices for dwellings. Specification for heat alarms |
|  | BS 5446-3 | 2015 | Detection and alarm devices for dwellings. Specification for fire alarm and carbon monoxide alarm systems for deaf and hard of hearing people |
|  | BS EN 54 |  | Fire detection and fire alarm systems – all parts |
|  | BS 9991 | 2015 | Fire safety in the design, management and use of residential buildings. Code of practice |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_70\_54\_10 Central Control/Building Management

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide * The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum) * BS 7671 - IET Wiring Regulations 18th Edition   The Scottish Building Standards 2015   * Section 6 (Energy) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE F guide * CIBSE H guide * CIBSE K guide * CIBSE M guide * Commissioning Code C: Automatic Controls * TM39: Building Energy Metering * KS04: Understanding Controls | | |
| Building Services Research and Information Association (BSRIA)   * KS04: Understanding Controls Building control and indoor environmental quality - a best practice guide (TN 9/98) * Library of System Control Strategies (AG7/98) * Effective BMS – A guide to improving system performance (AG10/2001) | | |
| British Standards | BS 7671 | 2008 | Requirements for Electrical Installations. IET Wiring Regulations |
|  | BS 9999 | 2017 | Fire safety in the design, management and use of buildings. Code of practice |
|  | BS EN 13321-1 | 2012 | Open data communication in building automation, controls and building management. Home and building electronic system. Product and system requirements |
|  | BS EN 13321-2 | 2012 | Open Data Communication in Building Automation, Controls and Building Management. Home and Building Electronic Systems. KNXnet/IP Communication |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_80\_45\_25 Earthing, Bonding, EMC & Surge Protection

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * BSRIA Power quality guide (AG 2/2000) * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Health and Safety Executive   * HSG85 Electricity at work: Safe working practices | | |
| NICEIC   * Technical Guidance | | |
| Energy Networks Association   * Engineering Recommendation: Guidelines for the Provision of Low Voltage Connections to Multiple Occupancy Buildings (G87/2010) * Distribution Code: Engineering Recommendation G12/4 (Requirements for the application of protective multiple earthing to low voltage networks) – a review of Engineering Recommendation G12/3 | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 62305 | Varies | Protection against lightning. All parts |
|  | BIP 2118 | 2007 | Protection against lightning. A UK guide to the practical application of BS EN 62305 |
|  | BS IEC 61643-32 | 2017 | Low-voltage surge protective devices. Surge protective devices connected to the d.c. side of photovoltaic installations. |
|  | BS EN 50539-11 | 2013 + A1: 2014 | [Low-voltage surge protective devices. Surge protective devices for specific application including d.c.. Requirements and tests for SPDs in photovoltaic applications](https://shop.bsigroup.com/ProductDetail?pid=000000000030297867) |
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|  |  |  |  |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
* PR\_40\_10\_57\_24 IDENTIFICATION - ELECTRICAL
* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
* PR\_35\_31\_68\_72 PAINTING AND ANTI-CORROSION TREATMENTS

# Ss\_75\_80\_45\_45 Lightning Protection

## PERFORMANCE OBJECTIVES

## DESIGN PARAMETERS

### Industry Standards

|  |  |  |  |
| --- | --- | --- | --- |
| Statutory Acts | The Building Regulations  The Electricity at Work Regulations 1989 | | |
| Building Control / Local Authority requirements | The Building Regulations Approved Documents   * Part P 2013 (Electrical safety - Dwellings) * Domestic Building Services Compliance Guide * Non-Domestic Building Services Compliance Guide   The Scottish Building Standards 2015   * Section 2 (Fire) * Section 4 (Safety)   The Memorandum of guidance on the Electricity at Work Regulations 1989 (the Memorandum)  IET Wiring Regulations 18th Edition, (BS7671:2018) | | |
| Industry standards | Chartered Institute of Building Services Engineers (CIBSE)   * CIBSE K guide | | |
| Building Services Research and Information Association (BSRIA)   * Design Checks for Electrical Services - A quality control framework for electrical engineers (BG 3/2006) | | |
| Health and Safety Executive   * HSG85 Electricity at work: Safe working practices | | |
| NICEIC   * Technical Guidance | | |
| Energy Networks Association   * Distribution Code: Engineering Recommendation G12/4 (Requirements for the application of protective multiple earthing to low voltage networks) – a review of Engineering Recommendation G12/3 | | |
| British Standards | BS 7430 | 2011 | Code of practice for protective earthing of electrical installations |
|  | BS EN 62305 | Varies | Protection against lightning. All parts |
|  | BIP 2118 | 2007 | Protection against lightning. A UK guide to the practical application of BS EN 62305 |

## SYSTEM DESCRIPTION

## CONTROL REQUIREMENTS

## SYSTEM DRAWINGS / SCHEMATICS

## REFERENCE SPECIFICATION CLAUSES

Also see the following Reference Specification SPEC-300 clauses for further details of Workmanship, materials standards, builders work standards, testing/ commissioning, and identification:

* PR\_65\_70\_11\_00 CONDUIT AND CABLE TRUNKING
* PR\_65\_70\_36/48\_00 HV/LV CABLES AND WIRING
* PR\_60\_70\_48\_06 BUSBAR TRUNKING
* PR\_65\_70\_11\_00 SUPPORT COMPONENTS - CABLES
* PR\_60\_70\_48\_00 LV SWITCHGEAR AND DISTRIBUTION BOARDS
* PR\_75\_51\_52\_00 CONTACTORS AND STARTERS
* PR\_70\_70\_48\_00 LUMINAIRES AND LAMPS
* PR\_65\_72\_00\_00 ACCESSORIES FOR ELECTRICAL SERVICES
* PR\_65\_70\_46\_00 EARTHING AND BONDING
* AC\_70\_65\_00\_00 TESTING AND COMMISSIONING OF ELECTRICAL SERVICES
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* PR\_20\_29\_00\_00 FIXING TO BUILDING FABRIC
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# Appendix A – MEP Engineering Services Tender Document List