Technical Submission

Project	Sunlight House, Manchester	Project Ref.	1394
Tech Sub Ref.	TS-E- 1015	Issued By	Paul Moss
Date	21/05/2024	Authorised By	David Wilson

Technical Submission	Electrical Design Criteria	
SPECIFICATION COMPLIANCE	✓	**In compliance with 4084-KIN-XX-XX-SP-E-001-T4**
DEROGATIONS		
CALCULATIONS PROVIDED		

Please refer to the following data for the Electrical design criteria for this project

Inline with BCO - Guide to specification update - February 2023

Information Required From	Myco
Latest Date Required	04/06/2024

Acceptance/Refusal		
STATUS A	**STATUS B**	**STATUS C**

Response From	
Response Date	

Sunlight House | Manchester

Electrical Services Design Criteria

Date: May 2024
Ref: CSD 1298
Revision: 1

Prepared By: O.Iqbal

Checked By: B.Wilson

designing . high quality . low carbon . buildings

Commercial Services Design Limited, 5 Woodside Court, Clayton Wood Rise, Leeds, LS16 6RF

Tel: +44 (0) 113 3223190

Email: info@csdesign.uk.com Web: www.csdesign.uk.com

Amendment Sheet

Revision	Description	Date	Author	Checked
0	Initial Issue	May'24	O.Iqbal	B.Wilson
1	Initial Issue	May'24	O.Iqbal	B.Wilson

Table of Contents

1 INTRODUCTION 4
2 ELECTRICAL DESIGN CRITERIA 5
2.1 Tenant Load Allowance 5
2.2 General Lighting 5
2.3 Reflectance Values 5
2.4 External Lighting 6
2.5 Emergency Lighting 6
2.6 Lighting Controls 6
2.7 Fire Alarm 7
2.8 Earthing 7
2.9 Cabling & Containment 7
2.10 Small Power Allowance 9
2.11 Design Margins 10

1 INTRODUCTION

This design criteria details the requirements against which the Electrical Services design will be developed around.

The project comprises of a Grade 2 listed office refurb:

- Landlords core areas
- Retail Units (not part of this phase)
- Tenant Office Spaces
- Photovoltaic Installation

This document aims to provide clear direction for early client team sign off so any conflict or discrepancy is ironed out early prior to development of the design.

2 ELECTRICAL DESIGN CRITERIA

2.1 TENANT LOAD ALLOWANCE

Area	BCO Allowance	Derived from
Small Power	6 w/m^2	BCO Briefing Note 2023
Lighting	5.5 w/m^2	BCO Briefing Note 2023
Ancillary Loads	2 w/m^2	BCO Briefing Note 2023
SER Allowance	7kW per tenancy area	BCO Briefing Note 2023

No spare capacity is allowed to tenant loads.

2.2 GENERAL LIGHTING

Area	Average lux level on the working plane			Working Plane (mm) AFFL	Derived from
	Ave Lux Level	Uniformity	Limiting Glare Rating		
Reception Desk	500	0.6 / 0.4	22	850	Specification & Drawings
Open-Plan Office	400	0.6	19	700	Specification & Drawings
Building Managers Office	300-500	0.6	19	700	Specification & Drawings
Stairs	150	0.4	25	0	Specification & Drawings
Circulation	100	0.4	25	0	Specification & Drawings
Toilets/Showers/Change areas (individual toilets/cubicles if these are fully enclosed)	150	0.4	25	0	Specification & Drawings
Lift Cars	100	0.6	25	0	Specification & Drawings
Lift Lobbies	200	0.6	25	0	Specification & Drawings
Plant Areas & Switch Rooms	200	0.4	25	0	Specification & Drawings
Stores	200	0.4	25	0	Specification & Drawings
Risers	100	0.4	28	0	Specification & Drawings
Substations	To electricity providers requirements	To electricity providers requirements	To electricity providers requirements	0	Specification & Drawings

2.3 REFLECTANCE VALUES

Area	Surface Reflectance	Derived from
Ceiling	70%	Specification & Drawings
Internal Walls	50%	Specification & Drawings
Façade Walls	26%	Specification & Drawings
Floor	20%	Specification & Drawings

2.4 EXTERNAL LIGHTING

Area	Lux Level	Min. Uniformity	Derived from
Roof	10	As high as is practical but not lower than 0.25	Specification & Drawings

2.5 EMERGENCY LIGHTING

Area	Lux Level	Uniformity	Derived from
Escape routes & Corridors	1 Lux min. (centre line) 0.5 Lux min. (1m band)	1:40/0.025	BS5266
Office Areas (Anti-panic in rooms with internal area exceeding 60 m2)	0.5 Lux min within the core area excluding 500mm border	1:40/0.025	BS5266
Disabled Toilets	0.5 Lux min within the core area excluding 500mm border	1:40/0.025	BS5266
Disabled Refuge	15 lux minimum on working plane	0.1	BS5266
Reception Areas	15 lux minimum on working plane	0.1	BS5266
Switch Rooms	15 lux minimum on front face of any switch panels	0.1	BS5266
Plant Areas	15 lux minimum on working plane (floor level) and front face of any switch panels	0.1	BS5266
Fire Alarm Panel	15 lux minimum	0.1	BS5266

2.6 LIGHTING CONTROLS

Area	Lighting Controls
Core Areas / Circulation cores	Presence detection: The building core (stairs, lift lobbies, circulation zones etc.) will remain lit if the building is occupied and will turn off after 15 minutes of no occupancy detected.
Reception	The ground floor reception area will be provided with dimmable lighting as well as presence detection. Lighting will default to the last used mode when turned on. Lighting scenes shall be coordinated with the Architect during the next design stage.
WCs / Stores / Changing Rooms	All WCs and stores will be provided with automatic switching via presence detection. Lights will be switched off automatically if the space is unoccupied for an 15 minute period.
Plant Rooms, risers and landlord roof plant areas	Manual switching shall be provided.
Offices (the following is included as an indication of how the CAT A fit out could be controlled but is outside the scope of the Shell and core provision)	Presence detection: To automatically switch on lighting when a specific area is occupied. Daylight linked dimming will be provided to all luminaires adjacent windows and will dim luminaires when there is sufficient natural daylight available and to regulate the illumination in the daylight linked dimming zone to specified maintained levels. Luminaires 6m away from windows shall be linked with daylight dimming.

	The following is an indication of how the CAT A fit out could be controlled. A notional circulation corridor within the open plan office would be provided and illuminated automatically when the office space becomes occupied. Lighting would be zoned into "bays" to allow certain areas to be turned on when the bay became occupied in a presence detection mode of operation. Lighting within bays would not be activated by persons passing by the bay in the notional corridor.

2.7 FIRE ALARM

Fire Alarm Systems		
Classification	L1	Specification

2.8 EARTHING

Type of Wiring	Method of Earthing
Final circuits wired in single core LSF - radial	CPC of same size as live conductors
Final circuits wired in single core LSF - ring	CPC of same size as live conductors connected as a ring
Final circuits wired in LSF multicore – ring	CPC of same size as live conductors connected as a ring
Final circuits wired in LSF multicore – radial	CPC of same size as live conductors connected as a radial
Final circuits wired in Twin & Earth	CPC to be bare copper integral of cable (supplementary earthing shall be provided as required)
Final circuits wired in XLPE / LSF sheathed - radial	CPC to be bare copper integral of cable (supplementary earthing shall be provided as required)
Final circuits wired in XLPE / LSF sheathed - ring	CPC to be bare copper integral of cable, connected as a ring (supplementary earthing shall be provided as required)
Final and distribution circuits wired in XLPE / LSF / SWA / LSF	Armour only or separate CPC only: Combined systems are not permitted.
Fire alarm Cabling	CPC to be bare copper integral of cable
Emergency Voice Communications	CPC to be bare copper integral of cable
Final Circuit Cabling Feeding Life Safety Installations	CPC to be bare copper integral of cable

2.9 CABLING & CONTAINMENT

Cabling	Cabling Type	Containment Type
Low Voltage Power Distribution Cables	Armoured multi core cables XLPE / SWA / LS0H Vertical Busbar XLPE / SWA / PVC - Underground (Externally)	Horizontally - galvanised steel cable tray and heavy-duty cable ties. Vertically – galvanised steel cable tray and cable cleats. Also utilising rising busbars Externally (In ground): Soft dig trenches complete with cable ducts under vehicle carriageways and at building entry. Marker tape installed above all cable runs.
Lighting and Small Power final circuit cables	LS0H single core cables within plant rooms and back of house areas. LS0H twin and earth.	Enclosed in galvanised steel trunking and conduit systems typically to plant spaces and back of house areas. Twin and Earth cables to be mounted in basket and utilise a conduit system.

		In ceiling flexes shall be housed in dedicated cable containment basket in the main runs.
Cables run from LCMs to luminaires and switches	Dual insulated flexes and switch wiring. Outer sheath shall be LS0H.	In ceiling and floor voids flexes shall be housed in dedicated cable basket/tray in the main runs. All final connections to luminaires shall be cleated direct to building structure at regular intervals in an organised manner, in runs of no more than four cables per cleat. In other instances, cable basket will be provided to accommodate groups of five or more cables. Cables connecting to LCM's shall be sized for the installation. Care and attention to detail will be maintained in the execution of this wiring. Cabling shall not be fixed to secondary structures (e.g. the ceiling) All cable drops to switches etc. shall be flush within the walls and housed within high impact PVC conduit.
Data / Communication Cables	CAT 6A 4 pair UTP/LSZH	Galvanised Cable basket to ICT specialists' requirements
Fire alarm cabling. This includes any cables on which fire communication depends e.g. autodial telephone lines and communications links	Cables shall have 'enhanced' fire resistance in accordance with BS 5839-1 "Prysmian FP Plus" (120 minutes) or equal and approved Cables shall be complete with red oversheath.	Dedicated / separate / mechanically separated containment system: Main distribution runs comprising more than two cables – galvanised steel wire cable basket Final connections to accessories and points - high impact PVC conduit (for flush installation) - galvanised steel conduit (for exposed surface mounted installation). - for individual cables, cables may be clipped directly to soffit using metallic clips, in accordance with British Standards (cabling shall not be clipped to secondary structure or ceiling systems).
Emergency Voice Communication Cabling (e.g. to Emergency Voice Communication)	Cables shall have "enhanced" fire performance in accordance with BS 5839-9 & 5829-1. "Prysmian FP Plus" (120 minutes) or equal and approved. Cables shall be complete with red oversheath.	Dedicated / separate containment system: Main distribution runs comprising more than two cables – galvanised steel wire cable tray. Final connections to accessories and points - high impact PVC conduit (for flush installation) - galvanised steel conduit (for exposed surface mounted installation). - for individual cables, cables may be clipped directly to soffit using metallic clips, in accordance with British Standards (cabling shall not be clipped

		to secondary structure or ceiling systems).
Armoured cabling to firefighting lifts/life safety systems	Cabling requirement outlined shall be provided as outlined in BS 8519. Cables should meet the fire performance requirements for Category 3 cables over 20mm overall diameter meet the 120- minute survival time when tested in accordance with BS 8491, or control cables meeting ph120 classification when tested in accordance with BS EN 5020.	Horizontally - galvanised steel cable tray and heavy-duty steel cable ties. Vertically – galvanised steel cable tray and cable cleats.
Ancillary Systems Cabling (Cabling conforming to band I in accordance with BS 7671)	Various Systems Dependant on system. Unless installed externally, all cables shall have LS0H outer sheathing.	Dedicated / Separate containment system: Galvanised steel basket Final connections to accessories and points: - high impact PVC conduit (flush installation) - Galvanised steel conduit (for exposed surface mounted installation). - For individual cables, cables may be clipped directly to soffit using metallic clips in accordance with British Standards (cabling shall not be clipped to secondary structure or ceiling systems).

2.10 SMALL POWER ALLOWANCE

Area	Allowance	Comments
Reception Desk	A minimum of 6 No. twin switched socket outlets integrated into the desk.	Installation details to be confirmed with the Contract Administrator. All cabling to be housed in dedicated hidden / flush flexible galvanised steel conduits.
Reception Area	A minimum of 3No. twin switched socket outlets with USB outlets shall be provided to the ground floor Atrium for the soft seating area.	Socket shall be flush mounted on the wall and coordinated with Architect.
Cleaner's sockets	Single switched socket outlets shall be provided to all landlord spaces, core areas and the main reception.	Socket locations shall be based on cleaning equipment having a flexible cord length of 9.0 metres.
Sanitary Ware	2no. fused connection units shall be provided to all vanity units within WCs to serve hand dryer. Fused connection units shall be provided for sensors taps, flow switches and water heater. Fused spur for panel heater within Acc WC.	Refer to the Architects WC GA's and elevations for more information.

2.11 DESIGN MARGINS

Electrical services design margins		
Item		
Supply characteristics	Preassigned	Specification
Switchgear	25% capacity / 25% unequipped outgoing ways	Specification
Distribution boards	25% capacity / 25% unequipped outgoing ways	Specification
Submains	20% future expansion	Specification
Final circuit design	20% in sub circuit load	Specification
Mains containment	25%	Specification
Data Containment	50%	Specification
External ducts	25% (4No Spare Comms ducts)	Specification