

**VISITOR CENTRE DEVELOPMENT AT
CAPE CLEAR, CO CORK**

**PARTICULAR TECHNICAL SPECIFICATION
FOR
ELECTRICAL SERVICES INSTALLATION**

Date	Issue	Section Changes	Written By	Checked By
26.01.26	TENDER		RY	RY

CLIENT



PREPARED BY



**UNIT 12 ORANMORE BUSINESS PARK
ORANMORE
CO GALWAY**

TENDER ISSUE: JAN 2026

CONTRACT PARTICULARS AND PRELIMINARIES	4
1.1 Extent of Work	4
1.2 Scope of Contract	5
1.3 Contract Documents	6
1.4 Defects Liability	6
1.5 Plant Warranties	6
1.6 Engineers Approval	6
1.7 Workmanship and Materials	6
1.8 Site Meetings	6
1.9 Rubbish/Site Cleanliness	6
1.10 Fire Precautions	7
1.11 Instructing the Client's Staff	7
1.12 Records of Tests	7
1.13 Operation & Maintenance Manuals and Record Drawings	7
1.14 Alterations, Additions and Omissions	8
1.15 Site Visit	9
1.16 Co-ordination	9
2.0 Introduction	10
ELEMENT 61	10
DISTRIBUTION SERVICES	10
61.0 INTRODUCTION	10
61.1 ESB Connection	10
61.2 Other Utility Providers	11
61.3 Main Distribution Board Installation	11
61.5 LV Sub Main Cables Installations	12
61.6 ELV Cable Tray Installation - Fire Alarm	12
61.7 ELV Cable Tray Installation	13
61.8 LV Cable Tray Installation	13
ELEMENT 62	14
GENERAL SERVICES	14
62.0 INTRODUCTION	14
62.1 General services socket outlet installation	14
62.2 Fused Connection Unit Installations/20A Double Pole Switches/Isolators	14
62.6 Hand Dryers	15
ELEMENT 63	15
LIGHTING SERVICES	15
63.0 INTRODUCTION	15
63.1 General Lighting Installation	15
63.2 Exit and Emergency Lighting Installation	16
COMMUNICATION SERVICES	17

64.0	INTRODUCTION	17
64.1	Data Installation	17
ELEMENT 67		20
SECURITY SERVICES		20
67.0	INTRODUCTION	20
67.1	Intruder Alarm Installation	20
67.2	Access Control Installation	21
67.4	CCTV Installation	22
ELEMENT 52		22
Electrical Wiring Associated With Mechanical Services		22
52.0	INTRODUCTION	22
52.5	Ventilation/Heat Recovery Units	23
52.6	Air Conditioning Units	23
ELEMENT 68		23
PROTECTIVE SERVICES		23
68.0	INTRODUCTION	24
68.1	Fire Alarm System Installation	24
68.2	Disabled Toilet Alarm System Installation	26
ELEMENT 69		27
General		27
69.0	INTRODUCTION	27
69.1	General earthing and bonding	27
69.2	Inspection, Testing and Certification	28

CONTRACT PARTICULARS AND PRELIMINARIES

1.1 Extent of Work

The works detailed within this specification are for the Electrical services Installation at Visitor Centre, Cape Clear, Co Cork.

- Element 06 – Preliminaries
- Element 07 – Insurances
- Element 08 – Dayworks
- Element 60 – Site Services/Enabling Works
- Element 61 – Distribution Services
- Element 62 – General Services
- Element 63 – Lighting Services
- Element 64 – Communication Services
- Element 65 – Mechanical Services
- Element 67 – Security Services
- Element 68 – Protective Services
- Element 69 – Earthing and Bonding Services

1.2 Scope of Contract

- 1.2.1 The scope of works for the Electrical installation systems shall include the supply, delivery, offloading, lifting/crainage installation, co-ordination, installation, testing & commissioning, set to work and demonstrate the complete installation as outlined in this specification. The electrical Contractor shall account for all components necessary for a safe, fully functioning, energy efficient, easily maintainable installation at design stage. These systems shall be included, but not be limited to, lighting, emergency lighting, fire alarm, security services, all wiring, containment, distribution boards, accessories and support systems. The detailed design of the Works shall be the responsibility of the Contractor.
- 1.2.2 "Detail Design" shall mean:

Attendance at design team meetings, preparation of detail design drawings and specifications, including sizing and material specification of the entire Electrical installations and systems. The Contractor shall assume responsibility for the detailed sizing, selection, co-ordination with reflected ceiling plans. No variations shall be accepted arising from any changes to plant or equipment locations or changes in services routes. The Contractor shall submit design documentation and builders work drawings to the Engineer for review and commentary prior to execution of the works.
- 1.2.3 The Works shall comprise the whole of the labour and all materials necessary to form a complete installation and such tests, adjustments and commissioning as specified and as may otherwise be required to provide a complete working installation.
- 1.2.4 The words "complete installation" in the above clause shall include all the incidental sundry components necessary for the complete execution of the works, and for the proper installation with their labour charges, whether or not these sundry components are mentioned in detail in the documents issued with this sub-contract.
- 1.2.5 The Contractors responsibilities shall also include liaison with main contractor to ensure their work is programmed in co-ordination with the Main Contractor's overall construction programme. Liaison with the Project Supervisor (Design) Stage for design issued and liaison with the Project Supervisor (works) Stage for construction/on-site issues to ensure that Health and Safety Act 2005 Requirements are complied with.
- 1.2.6 Checking of dimensions on site and preparation of Builder's Work Installation & Fabrication drawings. Design associated with Building Services, including secondary supplementary steelworks, access platforms and lift equipment for maintenance purposes (including loads imposed on the structure). Where required, design associated with temporary works not forming part of the final installation. Co-ordination with the Works of other Sub-contractors and attendance at meetings as may be required by the Main Contractor.
- 1.2.7 Preparation of Method Statements covering the whole of the Works inclusive of, but not limited to, off and onsite testing, inspection, installation, setting-to-work, testing and commissioning.
- 1.2.8 Weatherproofing and flashing to all services supplied under this contract which penetrate external elements of the building.
- 1.2.9 Supply of sleeves, inserts and any other items required under this contract to be cast in for the structure by others, including the co-ordination of positions.

1.3 Contract Documents

The contract documents shall include:

- 1.3.1 Tender Drawings.
- 1.3.2 General Specification
- 1.3.3 Particular Specification.

1.4 Defects Liability

- 1.4.1 The whole of the works, including the materials, workmanship and performance shall be guaranteed for a period of 12 months from the practical completion date, confirmed in writing.
- 1.4.2 All defects developed within this period to be rectified at the Electrical Contractor's own expense. Defects resulting from lack of maintenance will be excluded. The nature of the defects shall be determined by the Engineers.

1.5 Plant Warranties

- 1.5.1 The warranties on plant and equipment shall commence from the date of commissioning and acceptance of plant by the Engineers, where a manufacturer's warranty applies or from the date of practical completion, whichever is the later date.

1.6 Engineers Approval

- 1.6.1 Where specified to be approved, all equipment and materials **MUST** be cleared in writing before orders are placed with suppliers. Adequate time (ten working days) must be allowed for to obtain the Engineer's approval.
- 1.6.2 The Electrical Contractor shall include for the supply & erection of working samples to be installed in a mock-up room for comment by Architect and Engineer.
- 1.6.3 Any loss incurred by the Electrical Contractor not complying with the above procedure will be at their own cost.

1.7 Workmanship and Materials

- 1.7.1 The workmanship and materials used on this contract shall be of the highest standard and only suitably qualified Labour shall be employed for the Works.
- 1.7.2 Any sub-standard materials shall be removed and replaced at the Electrical Contractors own expense.

1.8 Site Meetings

- 1.8.1 The Electrical Contractor shall allow in his tender for his Contracts Manager to attend each site meeting, or any other meeting as dictated by the progress of the works. Site meetings shall normally be held at weekly intervals.

1.9 Rubbish/Site Cleanliness

- 1.9.1 The Electrical Contractor shall keep the workplace tidy at all times. The Electrical Contractor shall be responsible for removal of their debris/wastes from site.

- 1.9.2 The Electrical Contractor shall, on completion of the project, remove from the site all their left over materials and plant and they shall also remove their site accommodation.
- 1.9.3 Particular attention is drawn to the removal of all surplus materials, cartons, packing, off-cuts etc., from the ceiling void, plant rooms and concealed spaces. The clearing-out of these areas shall be carried out on an on-going basis by the Electrical Contractor during the course of the installation period. This is in the interests of health, safety and hygiene.

1.10 Fire Precautions

- 1.10.1 The main contractor responsible to take all measures necessary to prevent fire so that existing tenants are not put at risk. Further to this, the existing fire alarm on the 1st floor shall be maintained for duration of works until the new fire alarm system for this area is operational. The electrical contractor shall attend on the main contractor in this regard.
- 1.10.2 The Electrical Contractor shall take all reasonable precautions to prevent the outbreak of fire, particularly in work involving the use of naked flames.

1.11 Instructing the Client's Staff

- 1.11.1 The Electrical Contractor shall allow in their tender for instruction and demonstrating to the Client's staff the working and maintenance of all items supplied and installed under this contract.
- 1.11.2 The Electrical Contractor should also allow for having the equipment Manufacturers demonstration staff in attendance where necessary.

1.12 Records of Tests

- 1.12.1 After all tests have been carried out and the system set to work and commissioned, the Electrical Contractor shall submit to the Engineers in triplicate detailed records of tests with all relevant commissioning information. The exact commissioning procedure shall be agreed in advance with the Engineers.

1.13 Operation & Maintenance Manuals and Record Drawings

- 1.13.1 The Contractor shall within one month of practical completion of the works, furnish to the Client 'as built' drawings, and all commissioning/test certificates and Maintenance & Operating Manuals relevant to the works.

Before completion, the Contractor shall submit a rough draft of each maintenance manual. After approval and before making application for Final Payments, the Contractor shall deliver two (2) corrected hard bound copies and two electronic copies to the Engineer. Scanned images shall be clearly legible and shall be not less than 300 DPI.

- 1.13.2 Preparation of Operating and Maintenance Manuals shall be based on the following documents:

1. B.S. 4884, Parts 1 & 2.
Specifications for Mechanical Manuals.
2. BSRIA Technical Note TN 1/84.
Guidelines for building services operating and maintenance manuals.
3. BSRIA Application Guide 1/87.
Operating and maintenance manuals for building services installation.

4. BSRIA Technical Note TN 12/86.
Fault finding procedures in the building service industry.

1.13.3 Operating and Maintenance Manuals shall include the following information:

1. Index, introduction and safety of work.
2. Description of all systems and equipment.
3. Names, addresses and telephone numbers of all sub-contractors, suppliers and local firms for each item.
4. Technical documentation.
5. Equipment schedules and spare parts list.
6. Operating information.
7. Maintenance instructions.
8. Maintenance schedules.
9. Fault finding.

1.13.4 The Electrical Contractor shall provide two number complete sets of operation and maintenance instructions adequately prepared and bound together in manual form.

1.13.5 The Electrical Contractor shall provide 1 no. set of reproducible as built drawings and 2 sets of prints from these drawings.

1.13.6 The Electrical Services design drawings have been produced utilising "Auto-CAD 2015".

Upon completion of the project the Contractor shall be provided with discs of these drawings and will be expected to alter the drawings on Auto-CAD or a compatible computerised drafting system. In addition to the "hard copies" stated above the Contractor shall submit 2 sets of 'As Built' drawings in disc form.

1.13.7 The above documentation shall be submitted to the Engineers for approval before handing over to the Client.

1.14 Alterations, Additions and Omissions

1.14.1 No departure from the tender plans and specifications or any other alteration or additions shall be permitted or paid for until the written instructions of the Engineers have been obtained.

1.14.2 Any alterations, additions or omissions shall be priced in accordance with the Electrical Contractors Schedule of Rates.

1.14.3 Where it is not possible to apply the Schedule of Rates to any variation from the Contract, such variations shall be charged at the day work rates indicated by the Electrical Contractor in the Form of Tender.

1.14.4 The Electrical Contractor must advise the Engineers, in advance, of the details of any variations to the contract which may be necessary and the cost of same. He must in turn receive written approval from the Engineer before proceeding with any associated works.

1.15 Site Visit

- 1.15.1 Contractors tendering for the works shall be deemed to have visited the site of the works and ascertained the facilities for access thereto, the general convenience of working, the proximity of existing buildings and the supply of materials and labour the district will afford.
- 1.15.2 Contractors shall pay particular attention to the building structure regarding the supporting of the Electrical Services Installation.
- 1.15.3 The Contractor shall be deemed to have made a thorough examination of the tender drawings, the site and all features thereof with all services, drains, mains or other things affecting the proposed works to ascertain precisely the nature and extent of same and the conditions under which they will have to be executed and shall obtain their own information on all matters and all other things which can in any way influence their tender.

1.16 Co-ordination

- 1.16.1 Before any of the installation work commences the electrical contractor shall consult the engineers and other contractors to determine the correct, routes, heights and location of all services and to determine the correct sequence of erection. No claims for extras will be considered for work done due to the contractor's failure to predetermine the above aspects of the installation before the installation commences.
- 1.16.2 The mechanical contractor is to employ full time on site person as a competent M&E services co-ordinator.
- 1.16.3 The mechanical and electrical sub-contractors must co-ordinate to produce fully coordinated working drawings for the entire installation. These drawings must be produced on a phased basis to co-ordinate with the builder's programme.
- 1.16.4 The mechanical contractor must act as lead co-ordinator in the co-ordination process and in the production of the finalised co-ordination drawings. The lead co-ordinator will be responsible for setting up and conducting coordination meetings to co-ordinate the electrical, mechanical and builder's services. The co-ordinated drawings must include detailed plan layouts and detail cross sectional drawings. Separate co-ordinated drawings will be produced for each floor in the project.
- 1.16.5 The drawings must be issued to the architects and the consulting engineers for comment prior to commencement of work in any section of the installation.
- 1.16.6 The mechanical contractor will be responsible for issuing co-ordinated mechanical and electrical drawings to the design team and main contractor. The Mechanical Contractor must provide all necessary coordination drawings, working drawings and builder's works drawings that are required to carry out the project. The Engineer will issue Mechanical and Electrical drawings to allow the Mechanical Contractor to co-ordinate the works, who will be acting as lead co-ordinator of the services. The Engineer will be issuing Tender, Contract and Works Requirements (construction information) drawings to the contractor to allow them to develop their drawings. The Engineer will not be issuing working drawings to the Contractors. The Mechanical Contractor is required to present a full set of co-ordinated working services drawings for the full mechanical and electrical installation to the Engineer two weeks in advance of the mechanical and electrical works commencing on site.

2.0 Introduction

The project involves the complete electrical installation for the proposed new visitor centre, Cape Clear Co. Cork. The tendering contractor shall be aware; Cape Clear is an island located off the coast of Co. Cork. The only way on and off the island is by means of ferry. The project shall be tendered with this in mind and all costs associated shall be included in the tender sums provided. The proposed visitor centre will be constructed within the shell of an existing building which shall be fully stripped out by the electrical contractor as part of the works. The project involves the fit out of Electrical, Security, Protective and ICT services for the proposed renovation. The contractor shall work closely with the appointed media specialist "Miradormedia" to facilitate supplies for interactive displays and information boards.

The scope of works includes but is not limited to the following:

- Liaison with the ESB to establish a new connection.
- Strip out of existing electrical services.
- Complete electrical services installation to include:
 - o Power Distribution.
 - o Lighting
 - o General Services / Small Power.
 - o Electrical Services to Mechanical Equipment
 - o Voice and Data
 - o Fire Alarm System
 - o Intruder Alarm System
 - o Access Control System
 - o CCTV System
 - o Earthing and Bonding
 - o Testing and Certification

All cabling shall be carried out in Low Smoke and Fume type cable throughout the installation in accordance with IS10101:2020.

ELEMENT 61

DISTRIBUTION SERVICES

61.0 INTRODUCTION

This section of the specification shall cover the following services

- 61.1 ESB Connection
- 61.2 Other Utility Providers
- 61.3 Main Distribution Board Installation
- 61.4 Sub Main Distribution Board Installations
- 61.5 LV Submain Cable Installation
- 61.6 ELV Cable Tray Installation - Fire Alarm
- 61.7 ELV Cable Tray Installation
- 61.8 LV Cable Tray Installation

61.1 ESB Connection

Under this section the contractor shall include for liaising with the electricity provider.

The contractor shall be responsible for co-ordinating all aspects of the Electricity providers activities including builders work drawings, metering, connection etc.

The contractor shall act as a liaison between the Electricity provider and the main contractor.

The contractor shall include for all attendances on the Electricity provider during the course of carrying out this work.

The contractor shall include for all applications and provision of completion certificate for establishing a new 29kVA single phase supply to the building.

There is currently a 12kVA ESB supply entering the building which will be upgraded.

The contractor shall advise and aid the client with the ESB application for the MIC upgrade works

The contractor shall submit all necessary applications and certificates are submitted to the ESB to guarantee supply in accordance with the project programme.

The associated contribution shall be by the client, however, all liaison and interaction with the ESB including any relevant application shall be by the contractor

61.2 Other Utility Providers

Under this section the contractor shall include for liaising with the Eir.

The contractor shall be responsible for co-ordinating all aspects of the utility providers activities including builders work drawings, metering, connection etc.

The contractor shall act as a liaison between the utility provider and the main contractor.

The contractor shall include for all attendances on the utility provider during the course of carrying out this work.

The contractor shall submit all necessary applications to the utility companies to guarantee supply in accordance with the project programme.

61.3 Main Distribution Board Installation

Under this Section, the Electrical Contractor shall include for the supply and installation of a main LV distribution board as shown on drawings or described throughout the tender documentation.

This Section shall be read and construed in conjunction with the General Specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall supply, install, test and commission a new distribution board in accordance with the single line diagram and as indicated on drawings. The project requires the supply, installation, testing, commissioning and certification of a 125A new main metering board complete with MCB and MCCB sections to the form and type acceptable by the ESB.

The contractor shall carry out a test, inspection and certification in accordance with IS10101:2020 5th Edition National Rules for Electrical Installations.

The distribution board shall be surface mounted and shall be an assembly rated to a minimum short circuit withstand current of 12kA

All lighting circuits shall be protected by 6 Amp type 'C' SP&N RCBOs. General services circuits shall be protected by means of 20 Amp x 30mA double pole SP&N RCBOs.

Switchgear shall be rated to a minimum short circuit withstand current of 16kA. Main switches and busbars shall be rated to a minimum of 150Amps

The contractor shall select the circuit breakers to ensure full discrimination is achieved throughout the entire installation. The contractor shall submit computer calculations to indicate the prospective fault levels throughout the installation, along with verification that full discrimination is achievable.

All items of switchgear shall be labelled externally with plastic triple ply, engraved labels, secured with self-tapping screws.

Internal labelling of all MCB boards shall comprise a heat-sealed circuit chart, printed, identifying the circuit controlled, the MCB rating, the circuit reference number and cable size. All MCBs shall be labelled or numbered.

The contractor shall provide attendance on the provision by the main contractor of fire rated cupboards for the distribution board ensuring that full access for maintenance, cable connections, and cable routes is maintained.

All circuits shall be prewired to din rail mounted terminals with phase and neutral terminals mounted side by side.

30% spare capacity shall be required in each distribution board.

61.5 LV Sub Main Cables Installations

Under this Section this Electrical Contractor shall include for the supply and installation of all LV main and sub-main cables as indicated schematically on the SLD drawing

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

LV Sub-main cables shall be multi-core stranded copper conductor XLPE insulated, steel wire armor. Each sub-main shall be complete with an appropriately sized protective conductor.

LV main and sub main cables shall be fixed to the cable tray system using heavy duty nylon cable ties. Each cable shall be labeled using the cable reference as indicated on the drawings and terminated with approved brass glands complete with shrouds and brass earth tags.

The contractors scope includes but is not limited to supply, installation, testing and commissioning of the submain cabling as shown on schematic drawings.

61.6 ELV Cable Tray Installation - Fire Alarm

Under this Section this Electrical Contractor shall include for all cable trays to comply with layouts as shown on drawings

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

The Electrical Contractor shall include for supply and installation of the entire cable tray system for conveyance of fire alarm cables.

Cable tray shall be 100mm medium duty galvanised steel to BS 1449.

The Cable tray sizes indicated shall be the minimum size acceptable. This Contractor shall, prior to installation, satisfy himself as to their adequacy and shall advise the engineers if any of the trunking sizes need to be increased.

The Electrical Contractor shall include for vertical drops to all control panels, distribution boards. The Electrical Contractor shall include for all changes in level, only manufactured bends and tees shall be used.

The Electrical Contractor shall include for all necessary supports and brackets. Tray shall be fixed to the roof slab using Unistrut brackets. Supports shall be in accordance with manufacturer's recommendations and in any event shall not be greater than 300mm apart.

The Electrical contractor shall include for all fire stopping where containment passes through any cavity barriers.

61.7 ELV Cable Tray Installation

Under this Section the Electrical Contractor shall include for all ELV cable tray to comply with layouts as shown on drawings

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

The Electrical Contractor shall include for supply and installation of the entire cable basket system for conveyance of network cabling.

Cable tray shall be 150mm medium duty galvanised steel to BS 1449

The cable basket size indicated shall be the minimum size acceptable. This Contractor shall, prior to installation, satisfy himself as to their adequacy and shall advise the engineers if any of the tray sizes need to be increased.

The Electrical Contractor shall include for vertical drops to all panels etc. and shall include for all changes in level, only manufactured bends and tee's shall be used.

The Electrical Contractor shall include for all necessary supports and brackets. basket shall be fixed to the roof slab using a propriety hangers and rods designed by the electrical contractor. Supports shall be in accordance with manufacturer's recommendations and in any event shall not be greater than 300mm apart.

The Electrical contractor shall include for all fire stopping where containment passes through any cavity barriers.

61.8 LV Cable Tray Installation

Under this Section this Electrical Contractor shall include for all cable trays to comply with layouts as shown on drawings

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

The Electrical Contractor shall include for supply and installation of the entire cable tray system for conveyance of fire alarm cables.

Cable tray shall be 225mm medium duty galvanised steel to BS 1449.

The Cable tray sizes indicated shall be the minimum size acceptable. This Contractor shall, prior to installation, satisfy himself as to their adequacy and shall advise the engineers if any of the trunking sizes need to be increased.

The Electrical Contractor shall include for vertical drops to all control panels, distribution boards. The Electrical Contractor shall include for all changes in level, only manufactured bends and tees shall be used.

The Electrical Contractor shall include for all necessary supports and brackets. Tray shall be fixed to the roof slab using Unistrut brackets. Supports shall be in accordance with manufacturer's recommendations and in any event shall not be greater than 300mm apart.

The Electrical contractor shall include for all fire stopping where containment passes through any cavity barriers.

ELEMENT 62

GENERAL SERVICES

62.0 INTRODUCTION

This section of the specification shall cover the following services

- 62.1 General Services Socket Outlet Installation
- 62.2 Fused Connection Unit Installations/20A Double Pole Switches/Isolators
- 62.6 Hand Dryers

62.1 General services socket outlet installation

Under this Section the Electrical Contractor shall include for the supply and installation of General Service Socket Outlets as shown on drawings, and the strip out of the existing installation.

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

General services socket circuits shall be wired using 3x4.0mm² PVC/LSF/Cu insulated copper cables installed in cable trunking above the ceiling. Circuits shall be radial throughout.

All socket outlets shall be switched 13 Amp type to BS 1363. Double sockets shall be good quality and in compliance with Part M of the Building regulations. Socket outlets shall be ultra-flush, brush chrome with black insert and outboard rocker switches finish or ultra flush white pvc with outboard rockers depending on colour contracting background.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawings is the responsibility of the electrical contractor.

62.2 Fused Connection Unit Installations/20A Double Pole Switches/Isolators

Under this Section, the Electrical contractor shall include for the supply and installation of power points to serve specialist equipment as shown on drawings

This section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

Except where indicated, each item shall be wired from a local distribution board using shall be wired using 4.0mm² PVC/LSF/Cu insulated copper cables installed in cable trunking above the ceiling. Circuits shall be radial throughout.

Each item shall be served by a 20 Amp switched / unswitched or 13amp switched / unswitched fused connection unit mounted locally as indicated on drawings. These units shall be surface / flush mounted depending on location.

Each unit shall be labelled using a self-adhesive triplex label stating the circuit reference number and item of equipment being served.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawings is the responsibility of the electrical contractor.

Fuse spur units/Double Pole Switches/Isolators shall be good quality and in compliance with Part M of the Building regulations. Socket outlets shall be ultra-flush, brush chrome (or white PVC depending on background colour) with black insert finish throughout.

62.6 Hand Dryers

Under this Section, the Electrical contractor shall include for the supply and installation of hand dryers as shown on Drawings

This Section shall be read and construed in conjunction with the General Specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall supply, install, test and commission all hand dryers as indicated on drawings.

Hand dryers shall be installed in all toilets as indicated on the drawings.

Hand dryers shall be positioned as indicated on the Drawings and mounted at 1,150mm above finished floor level.

Cables to hand driers shall be run via a fused spur outlet, mounted above the unit, 300mm below the ceiling, as indicated on the Drawings. Hand dryer specification and details, Dyson HU02 Sprayed Nickle Air Blade V Dryer or equivalent.

ELEMENT 63

LIGHTING SERVICES

63.0 INTRODUCTION

This section of the specification shall cover the following services

- 63.1 General Lighting Installation
- 63.2 Exit and Emergency Lighting Installation
- 63.3 External Lighting

63.1 General Lighting Installation

Under this Section, the Electrical Contractor shall include for the supply and installation of lighting as shown on drawings or described throughout the tender documentation.

This Section shall be read and construed in conjunction with the General Specification. Where clauses of the two Specifications are at variance with each other, this particular Specification shall take precedence.

The Electrical Contractor shall supply and install the complete lighting installation as indicated on drawings.

Lighting shall be cabled using 2.5mm² PVCLSF/Cu cables routed through cable trunking and steel conduits to final locations.

Final connections to luminaires shall be made by means of a Klik socket and pre-manufactured plug in lead.

Light switches shall be located as shown on drawings and mounted at 1200mm to the top of the switch and to the approval of the engineer. Light switches shall be multigrid type with an ultra flush, brushed chrome finish, black insert (or white PVC depending on contrasting background colour).

The contractor shall supply, install, test and commission a standard presence detection where indicated.

- Occupancy detector with extended detection area
- One potential-free (dry) contact
- Version as master device
- Detection area can be extended with slave devices
- Manual switching via push-button possible
- Available settings 10sec-30min and 10-2000 lux

All sensors shall be set for a minimum operation duration of 20 minutes.

The contractor shall employ the services of a Lighting Controls specialist or to fully commission the lighting controls system to the satisfaction of the client.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

63.2 Exit and Emergency Lighting Installation

Under this Section, the Electrical Contractor shall include for the supply and installation of exit and emergency lighting as shown on drawings and in full compliance with IS 3217-2013.

This Section shall be read and construed in conjunction with the General Specification. Where clauses of the two Specifications are at variance with each other, this particular Specification shall take precedence.

The contractor shall carry out the emergency lighting installation throughout the entire school as shown on drawings.

The Electrical Contractor shall wire each emergency fitting using 1.5mm² PVC/PVC/LSF/Cu cables installed in cable trunking and conduits.

Contractor to ensure the emergency lighting is fed from the same MCB as general lighting in the area.

Particular attention should be paid to the location of exit and emergency light fittings. The installation of all fittings must be co-ordinated to ensure that light levels are not affected by distribution systems, ductwork, plant etc.

The Electrical Contractor shall include for the supply, installation and connection of central test units for the entire exit and emergency lighting services.

The unit shall include:-

- (a) On / Off Control Switch.
- (b) 1 / 3 hour selection switch.
- (c) Test push button.
- (d) Emergency lighting on test indicator.
- (e) Test complete indicator.

Operation of the test button shall energise the contactors to break the feeds to the emergency outlet, and shall automatically reset after the selected test period. The system shall include all necessary contactors. All emergency and exit units and inverters shall be controlled through the test unit. The complete installation shall comply with IS 3217-2013.

63.3 EXTERNAL LIGHTING INSTALLATION

The electrical contractor shall supply and install the external lighting installation as shown on the drawings and as specified in the schedule of light fittings.

All external light fittings shall be erected in such a manner as to prevent the ingress of moisture.

External light fittings shall be switched via a hand/off/auto switch, in conjunction with a time clock/photocell arrangement incorporated within the main switchboard.

Wall mounted site lighting shall be supplied utilising 2.5 mm² PVC/PVC/LSF/Cu cables in conduit and trunking, from 10 Amp MCB in sub distribution board.

ELEMENT 64 COMMUNICATION SERVICES

64.0 INTRODUCTION

This section of the specification shall cover the following services

64.1 Data installation

64.1 Data Installation

Under this Section, the Electrical Contractor shall include for the supply, installation, testing and commissioning of the complete structured cabling system as shown on drawings.

The structured cabling system shall be designed and installed to provide a system which shall provide the end user with a speed infrastructure for the future which complies with ANSI TIA / EIA 568B, ISO 11801 2nd Edition and EN50173 2nd Edition. The system shall also be compliant with the electromagnetic compatibility requirements of EN 55101, EN 50081 and EN 50082. The cabling system shall meet the permanent link and channel performances defined in these standards.

The cabling system shall be a Cat 6 System by Excel or equivalent and shall be installed by the contractor.

The system shall have all performance parameters as defined for 4 connector channel as per stated standards.

The voice and data installation shall be used on a fully integrated structured cabling system on IT Industry standards and shall consist of the following:

- Backbone sub-system.
- Horizontal sub-system.
- Work location system – system.
- Equipment room sub-system.

The system shall support analogue and digital applications, voice, data, local area networks (LAN) and video on a common cabling platform.

Cableways:

Horizontal – vertical cableways in the form of cable tray (ELV)

Voice – data conduit wireways from ELV cable tray system.

Voice – data outlet back boxes.

The contractor shall be responsible for the complete data / voice installation including installation of main and final distribution cables, outlet plates, punch down and final connections.

This specification is based on a full Category 6A system compliant to all relevant standards as stated in this document.

System Cabinets:

Comms Room Data Installation (as specified below)

The main data cab shall be 21U 600mm x 600mm wall mounted communications cabinets shall be provided. The cabinet shall be complete with full integral cable management and shall have lockable hinged door and top/bottom cable entries. The cabinet shall be complete with a 12 way power distribution unit. Data cables shall generally enter from above.

The contractor shall supply 6 No.24 Port patch panels in the Data Cab.

Door frame side rails shall have slots for ventilation. Glass doors shall be framed to protect glass edges from damage and ensure full electrical bonding. No adhesives shall be used in the glass or steel construction so as to avoid door distortion at high temperatures from active equipment. Glass shall be toughened smoked glass. Doors shall be instantly removable via spring hinge pins and shall be readily mounted on left or right handed.

Doors shall open through 180degrees when cabinets are bayed or 270degrees when stand alone, so as to comply with EU standards for unobstructed personnel evacuation in case of fire.

Earth bonding studs shall be fitted. Door locks shall be fitted.

The cabinet bases shall have a large cable access port and front and rear cable access ports shall be provided in the base to allow cable entry when cabinets are mounted directly on solid floors.

The cabinet roof shall offer an extensive choice of cable entry ports. Roof fans shall be fitted and shall be replaceable (for maintenance or upgrade) without removing the cabinets roof or electronic equipment in the cabinet.

Cable Identification & Labelling:

All labelling shall conform to good labelling and identification standards. The specialist contractor shall also include for slip-over ferrule type numbers to be fitted to each with the exception of cables terminating at rear of work station outlets. Numbering will consist of a four-digit system. Labelling of work station outlets may be glued to the face of each plate using Loctite Super Glue. Labels shall be Traffolite or similar engraved type.

The cables shall also be labelled at a distance of approximately 150mm from termination. Cables shall also be labelled at any point they enter or leave concealment. The labels shall be proprietary modular fixed type and in all cases shall indicate that patch panel number, port, plus the destination equipment closet and hub number. The IT contractor should consult with Engineer in relation to finalising labelling scheme. Before the Contractor consults engineer, he should familiarise himself with ANSI / TIA / EIA 6060 or EN50174 or ISO 14763-2.

Port Plans:

The contractor shall include for maintaining as accurate, detailed record of the works as they progress. He shall include for supplying copies of 'as-installed' port plans upon completion of each area. Drawing shall be A1 Negative Form and shall be submitted to the Engineer as directed.

Punch down, Testing and Commissioning:

The system shall be tested in compliance with IEC61935 to confirm Cat 6A Performance. The meter used shall be level 111 meter as per the Fluke DSP 1800. Cabling must be tested in both directions and the results stored in an electronic database compatible with the tester manufacturer's cable management software. 100 percent of all links shall be tested. The following tests shall be recorded:

Wire Map	PS ELFEXT
NEXT	ELFEXT
PC NEXT	ACR
Return Loss	PC ACR
Attenuation	Propagation Delay
Impedance	Delay Skew
Loop Resistance	

Results shall be documented as per labelling. The IT contractor shall provide a CD ROM containing all results.

Warranty:

The warranty shall be complete channel warranty. A link warranty will be rejected. The warranty shall guarantee lifetime applications and cover full product and labour replacement. Full details of the warranty document should be made available to consultant on request.

Training:

Complete training records should be made available to consultant on request.
Training that is dated more than 2 years shall be rejected.

General:

The specialist sub-contractor shall include for fishing cables through conduits.

The installation specialist shall be listed as an approved installer by the vendor supplying the passive product.

The specialist shall be responsible for all wiring, erection, and testing, commissioning and final connection of equipment.

The contractor shall supply, install, test and commission a Multimode Fibre Cable links between the comms cabinets as indicated on drawings.

The contractor shall supply, install, test and commission a 20 pair phone cable between the comms cabs as indicated on drawings..

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

ELEMENT 67

SECURITY SERVICES

67.0 INTRODUCTION

This section of the specification shall cover the following services

- 67.1 Intruder Alarm Installation
- 67.2 Access Control Installation
- 67.4 CCTV Installation

67.1 Intruder Alarm Installation

Under this section the contractor shall include for the supply and installation of the intruder alarm installation as shown on drawings

This section shall be read and construed in conjunction with the general specification. Where clauses of the two specifications are at variance with each other, then this particular specification shall take precedence.

The contractor shall carry out a full survey of the existing system to establish the full extent of the works.

The intruder alarm system shall be HKC 10270 similar or approved. The system shall be accessible remotely via proprietary software and a proprietary mobile device application. The contractor shall supply, install, test and commission a GSM (SC) and Landline communications card (DTV) in each panel as part of this contract. The contractor shall include for all programming necessary to commission the communication element of the intruder alarm to the satisfaction of the client.

The contractor shall be responsible to deliver a fully functioning commissioned and tested system. The contractor shall be responsible for providing remote access for up to 5 mobile devices.

The contractor shall supply, install, test and commission expander units as required, it shall be the responsibility of the specialist security contractor to quantify the expanders required.

The intruder alarm cabling installation shall be installed as follows in conduit and in cable tray, 6 core alarm cable shall be used from the main intruder alarm panel to each alarm device shown on the drawings.

A 230v supply shall be provided at the main intruder alarm panel. The contractor shall cable in 3x 2.5mm² LSF PVC insulated cable from the local power MCB board. The contractor shall include for terminations.

Intruder alarm cables shall be run on existing cable trays where possible

The contractor shall use the services of a PSA licensed, third party approved, specialist sub-contractor to carry out all security systems works.

The contractor shall include for the supply, installation, testing and commissioning of the intruder alarm system.

The contractor shall allow to integrate the intruder alarm system with the open library system in accordance with the open library connection schematic provided on drawings.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

67.2 Access Control Installation

Under this Section, the contractor shall include for the supply and installation of a stand alone access control door systems as shown on drawings.

This section shall be read and construed in conjunction with the general specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall include for the supply and installation of the entire LV and ELV wiring for the access control door system installation.

The access control door entry system shall be as specified below. The access control system shall be networked on doors where the system is required. The contractor shall be responsible for all, configuration and commissioning.

The system shall comprise:-

- a) Electronic locks – **ASSA ABLOY, Magnetic Lock or equivalent**
- b) Power supply units – **Vanderbilt or equivalent**
- c) Egress buttons (WtE) – **Smartwatch or equivalent**
- d) Control units – **N/A**
- e) Door modules – **N/A**
- f) Readers – **Vanderbilt or equivalent**
- g) Green break glass units – **Smart Watch or equivalent**
- h) Software/Platform- **N/A**
- i) I/O from fire alarm – **As fire alarm system**

The contractor shall use the services of a PSA licensed, third party approved, specialist sub-contractor to carry out all security systems works.

The contractor shall include for terminations and final connections

The contractor shall include for the supply, installation, testing and commissioning of the Access Control System

The contractor shall include for all necessary chasing and builders' works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

67.4 CCTV Installation

Under this section the contractor shall include for the supply and installation of the IP CCTV installation as shown on drawings

This section shall be read and construed in conjunction with the general specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall include for cabling the CCTV systems in accordance with the layout drawings and with the client's requirements. The system shall be supplied as part of the open library system to ensure seamless integration between the systems.

The contractor shall include for terminations, final connections, testing and commissioning of CCTV cabling installations.

The contractor shall supply and install 2 No. Cat6A cable to each camera location indicated on drawings

Cameras shall be supplied via 12VDC power supplies or a POE switch. This decision may be made at the contractors discretion.

CCTV Camera shall be 5Mp by Axis or equivalent

CCTV NVR Shall be 16channel NVR or and come complete with 9TB of storage.

The contractor shall be responsible to deliver a fully functioning commissioned and tested system. Final images shall be to the satisfaction of the client. The contractor shall be responsible for providing remote access for up to 8 mobile devices.

CCTV Monitor shall be manufactured for use with CCTV. The monitor shall be capable of displaying a 1080p image.

The contractor shall use the services of a PSA licensed, third party approved, specialist sub contractor to carry out all security systems works.

The contractor shall include for the supply, installation, testing and commissioning of the CCTV equipment.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

ELEMENT 52

Electrical Wiring Associated With Mechanical Services

52.0 INTRODUCTION

This section of the specification shall cover the following services

52.5 Ventilation/Heat Recovery Units

52.6 Air Conditioning Units

The electrical contractor **MUST** liaise with the mechanical contractor to finalise locations and requirements for all mechanical equipment. The electrical contractor is responsible for carrying out

this coordination. No claims arising from this exercise not being carried out will be entertained by the Engineer

52.5 Ventilation/Heat Recovery Units

Under this section, the contractor shall include for the supply and installation of LV and ELV wiring to the heat recovery units as shown on the drawings

This section shall be read and construed in conjunction with the general specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall cable in 3 x 4.0mm² XLPE/SWA/PVC/Cu cable run on cable trays from the main electrical distribution board to each unit terminating in a local 20A isolator.

Supply and extract fans shall be controlled by, time clock and speed controller.

The contractor shall include for final connection.

Speed controllers shall be located adjacent to the units in the ceiling void. Speed controllers shall be supplied by others.

The contractor shall include for erecting and connecting up all control panels and all miscellaneous control devices, including thermostats, sensors etc. all of which will be supplied "Free Issue" by the mechanical contractor.

The contractor shall allow for connecting all VSD's and ancillary components of the AHU, all components to be free issued by the Mechanical Contractor.

52.6 Air Conditioning Units

Under this section, the contractor shall include for the supply and installation of LV and ELV wiring associated with the Air Conditioning Units as shown on the drawings

This section shall be read and construed in conjunction with the general specification. Where clauses of the two specifications are at variance with each other, this particular specification shall take precedence.

The contractor shall include for the supply and installation of LV, ELV and wiring associated with the Air Conditioning Units

Air Conditioning Units will be supplied by the mechanical contractor and cabled and terminated by the electrical contractor. The electrical contractor shall cable to the outdoor units as noted on drawings PVC/PVC/Cu cable. The electrical contractor shall cable between indoor and outdoor units. The electrical contractor shall cable between the indoor unit and the room controller in a 2 pair screened structured cable.

The room controller shall be supplied by the mechanical contractor. The installation shall be coordinated with the mechanical contractor.

ELEMENT 68

PROTECTIVE SERVICES

68.0 INTRODUCTION

This section of the specification shall cover the following services

- 68.1 Fire Alarm System Installation
- 68.2 Disabled Toilet Alarm System Installation

68.1 Fire Alarm System Installation

Under this section the Electrical contractor shall include for installation of a new fire alarm and detection system throughout the entire school as shown on drawings.

The contractor shall install a new analogue addressable fire alarm system throughout the entire school. This will require all new cabling, containment and fire alarm equipment throughout.

The Electrical contractor shall allow to supply, install test and commission all devices as shown on the fire alarm layout drawing

The Contractor shall supply, install, test, commission and certify a complete fire alarm and detection system. The system shall comply with all parts of IS3218:2013, relevant parts of BS5839-1:2013. Fire alarm and detection equipment shall comply with relevant parts of EN54.

The Contractor shall deliver a fully functioning, compliant fire alarm system to the full intent of the scope.

68.1.1 Fire alarm system power supply installation

The contractor shall supply, install, test and commission the electrical supply required for each fire alarm control panel.

The contractor shall supply, install, test and commission the following equipment associated with the electrical supply to the fire alarm control panel:

- 6 amp MCB in each local panel
- 13amp Un-switched spur fuse complete with neon indicator
- All final cabling and terminations

Cabling shall be carried out **2.5mm² PH120 Fire tuff** using the following colour scheme:

- L1 – Brown
- Neutral – Blue
- Earth – Green and Yellow

The circuit shall be tested and certified in accordance with of IS10101:2020 5th edition, National Rules for electrical Installations

The spur fuse unit shall be clearly labeled:



FIRE ALARM SUPPLY
DO NOT SWITCH OFF

Labeling shall be 8pt text height, engraved traffolite label.

68.1.2 Testing and Commissioning

The contractor shall carry out inspection and testing of the circuit in accordance with IS10101:2020 5th edition National Rules for Electrical Installations

The following tests must be carried out:

- Continuity of protective and bonding conductors
- Insulation Resistance
- Detection of erroneous connections (Where MCB is fitted in existing consumer unit)
- Separation of Circuits
- Polarity
- Earth Fault Loop Impedance
- Functional Testing

The contractor shall provide an inspection schedule, completion certification and schedule of test results to the Engineer for review following the completion of each block.

68.1.3 Cabling

The Contractor shall supply, install, test and terminate all fire alarm and detection cabling in PH120 **Prysmian FP200 Gold** LS0H

A minimum CSA of **2.5mm²** shall be acceptable for sounder circuits and **1.5mm²** for detection and manual call point circuits.

68.1.4 Fire Alarm Control Panel

The Contractor shall supply, install, test, and commission an analogue addressable intelligent fire alarm panel which complies with EN54-2 EN54-4 and EN54-13

The Fire Alarm Control Panel shall have the following features:

- Loop Capacity of 125 Devices
- 3 no. Sounder Outputs
- 4 No. Programmable Relays
- Detector Signaling Immunity to External Influences
- Intelligent Drift Compensation
- Daily Automated Self Testing and Verification of Sensors
- Integral Function for Display of Power Measurements of Loads
- Electronic Fuse Protection on all Outputs
- Modular Power Supply
- Automatic Service Reminder for User
- Updateable System Firmware
- Facility for User Testing
- Integrated TCP/IP Connectivity

The Fire Alarm Control Panel shall have a display of sufficient size to display fully labelled and addressed locations of fire alarm activations. Abbreviated labels will not be acceptable.

The Fire Alarm Panel shall be accessible via the use of a password (pass-code) or a standard fire mans key.

The Fire Alarm Panel shall have a separate fault log and fire alarm activation log for ease of use while searching for an event.

Fire and Fault activations shall be reset individually from the control panel. A Fire Alarm Control Panel which offers a global reset option only shall not be acceptable.

The Fire Alarm Panel Shall continuously monitor field devices. The Fire Alarm Control Panel shall display the condition of detectors falling outside the thresholds for the device.

68.1.5 Sounders

The Contractor shall supply, install, test, and commission conventional flashing beacon strobe sounders as indicated on drawings. Fire Alarm Sounders must comply with EN54-3 and EN54-23.

Fire Alarm Sounders shall be the audiovisual type, sounder complete with integrated strobe combined in one unit.

Fire Alarm Sounders shall be strictly in accordance with manufactures guidelines.

68.1.6 Manual Call Points

The Contractor shall supply, install, test, and commission addressable manual call points as indicated on drawings. Fire Alarm Sounders must comply with EN54-11 and EN54-17.

Manual call points shall be red in colour and mounted at a height of 1200mm AFFL

All Manual Call Points shall be complete with an integrated short circuit isolator.

Manual call points shall incorporate a bi-coloured pulsing LED as indication of communications polling. The LED shall be continuously lit upon activation of the device.

The LED indication on the call point shall carry out the following function:

Communications Polling	Pulsing RED
Device Activated	Solid RED
Short Circuit Isolator Active	Amber

Manual Call Points shall be activated through the operation of a non frangible (plastic) element. The manual call point shall be fully resettable. Glass elements will not be accepted and shall be replaced with frangible (plastic) elements at the contractors' expense.

Manual Call Points shall be tested by insertion of a test key in the underside of the unit.

68.1.7 Detection

The Contractor shall supply, install, test, and commission addressable smoke detectors and multi sensors as indicated on drawings. Fire Alarm Sounders must comply with EN54-5 and EN54-7

Multi sensors shall be heat assisted smoke sensors throughout communal and habitable areas.

Detectors installed in voids shall be fitted with a remote indicator, wall mounted below ceiling level at the closest possible location to the detector.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

68.2 Disabled Toilet Alarm System Installation

Under this section the Electrical contractor shall include for installation of a disabled toilet alarm as shown on drawings.

The contractor shall install a new disabled toilet alarm system in the disabled W/c in the new extension. This will require all new cabling, containment and equipment throughout.

A disabled toilet call alarm system shall be provided to the disabled toilet indicated on drawings. A central monitoring panel will be provided in the reception area with a link taken to the toilet. The toilet will have a pull cord, alarm strip (Dado Type), indicator unit over door outside and a manual reset unit on the wall internally. Power to the main unit will be from the local distribution board to a spur unit located adjacent to the panel. Final connection in heat resistant flexible cable. Wiring shall be carried out in 1.0 mm² PVC cables in conduit.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

ELEMENT 69

General

69.0 INTRODUCTION

This section of the specification shall cover the following services

- 69.1 General earthing and bonding
- 69.2 Inspection, Testing and Certification

69.1 General earthing and bonding

Under this Section the Electrical Contractor shall include for the supply and installation of Bonding and Earthing throughout.

This Section shall be read and construed in conjunction with the General Specification. Where Clauses of the two specifications are at variance with each other, this particular Specification shall take precedence.

- Protective conductors
- Main bonding conductors
- Local bonding conductors

Protective conductors shall be run with each sub-main and final circuit as described in the General Specification.

Main bonding conductors shall be installed between the earthing bar in main Switchboards and each of the following;

Water	25mm ²
Ventilation Ductwork	25mm ²
Distribution Boards	16mm ²
Switchboards	Half the size of the phase conductor subject to a maximum of 95mm ²
Metal partitions	10mm ²
Ceiling grids at 10m centres	10mm ²

Local bonding conductors shall be provided.

The contractor shall include for all necessary chasing and builders works associated with the installation. All containment (Steel conduits) to final locations not shown on drawing is the responsibility of the electrical contractor.

69.2 Inspection, Testing and Certification

Testing and Certification shall take place in accordance with IS10101:2020 5th Edition National Rules for Electrical Installations.

An inspection of the installation shall be carried out before testing commences. Testing shall be carried out in the sequence laid out in IS10101:2020 5th Edition National Rules for Electrical Installations. This sequence is as follows:

- Continuity of protective and bonding conductors
- Continuity of all final circuits
- Insulation resistance
- Detection of erroneous connections
- Separation of circuits: SELV, PELV, electrical separation
- Automatic disconnection of supply (RCD test)
- Floor and wall resistance
- Polarity
- Phase Rotation
- Functional Testing



CBS Consulting Engineers Ltd

Chartered Building Services Engineers